

Technical Training Field Repair Guide DVD/CD Library System

DRM-3000



Multimedia & Web Training Department
545 Nolen Drive Suite 100
Southlake, Texas 76092

Pioneer
— S E R V I C E —

Table Of Contents

Safety Information.....	3	Test Mode.....	40~43
Specifications.....	4	Troubleshooting.....	44~46
Media Storage Capacity.....	5	Error Codes.....	46~51
Accessories and Options.....	6	Error-Log Codes.....	52~59
Panel Facilities.....	7~8	Physical Addresses....	60
PCB Locations.....	9	SCSI Sense Code.....	61
PCB Part Numbers.....	10	Diagnosis Program..	62~63
Power Supply Block Diagram...11~12			
Circuit Board Descriptions.....13~14			
Overall Wiring Diagrams.....15~20			
Disassembly.....21~24			
Carriage Base Maintenance.....25~26			
Cleaning.....27~28			
Adjustments.....29~37			
System Administrator Mode....38~39			

SAFETY INFORMATION

This manual is intended for qualified service technicians ; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual. Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING

This product contains lead in solder and certain electrical parts contain chemicals which are known to the state of California to cause cancer, birth defects or other reproductive harm.

Health & Safety Code Section 25249.6 - Proposition 65

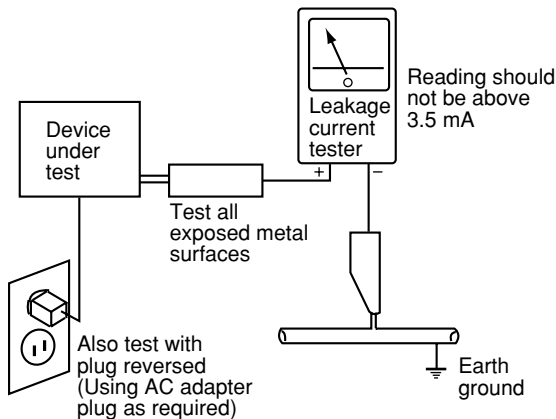
(FOR USA MODEL ONLY)

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5mA.



AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a $\triangle$ on the schematics and on the parts list in this Service Manual.

The use of a substitute replacement component which does not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

SPECIFICATIONS

[300 DISC CHANGER]

Description 300 disc changer
 Power supply AC 100V-240V, 50/60 Hz
 Power consumption Maximum of 3.3A (300 W)
 Weight of main unit (including placement fixtures) 60.6 kg
 (133 lb 10oz)

External dimensions (including placement fixtures)
 760 x 729 x 872 mm (W x D x H)
 29-15/16 x 28-11/16 x 34-5/16in (W x D x H)
 Operating requirements * +5°C to +35°C
 Humidity * 5% to 85% (with no condensation)
 Storage requirements -40°C to +60°C

* The figures for permissible operating temperature and humidity may change depending on the components loaded. For details, consult the operating instructions for each component used.

Functional specifications

Maximum number of discs 320 (12-cm discs)
 Maximum number of disc magazines
 50-disc magazines 6
 20-disc hyper magazine 1
 Maximum number of drives 8

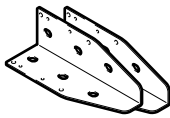
Items included

20-disc hyper magazine 1
 Changer/drive SCSI cable 1
 Power cord (for use in Canada and USA) 1
 Power cord (for use in Japan) 1
 Base stabilizer 2
 Screw for use in attaching Base stabilizer 6
 Lock release key 2
 Operations Instructions 1

●The external design of this product or any of the above specifications may be changed at any time without prior notification.

[Accessories]

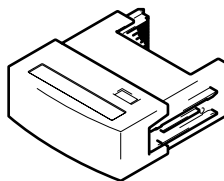
Base stabilizer ... x 2
(DNH2385)



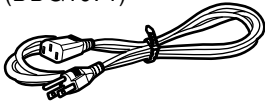
Changer/drive SCSI cable ... x 1
(DDC1006)



20 disc hyper magazine ... x 1

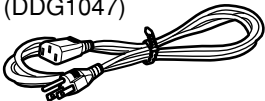


Power cord
(for use in Canada and USA) ... x 1
(DDG1071)



This type of power cord is for use in America and Canada only. Do not use this power cord in places other than America or Canada.

Power cord
(for use in Japan) ... x 1
(DDG1047)



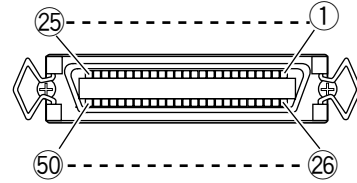
This type of power cord is for use in Japan only. Do not use this power cord in places other than Japan.

Lock release key ... x 2
(DXC1006)



Screw for use in attaching placement fixtures x 6
 Operating instructions x 1
 Warranty x 1
 Service network sheet x 1

SCSI connector specifications



1) Pin layout of SCSI connectors

Signal name	Pin No.	Signal name
GROUND	1	26 DB(0)
GROUND	2	27 -DB(1)
GROUND	3	28 -DB(2)
GROUND	4	29 -DB(3)
GROUND	5	30 -DB(4)
GROUND	6	31 -DB(5)
GROUND	7	32 -DB(6)
GROUND	8	33 -DB(7)
GROUND	9	34 -DB(P)
GROUND	10	35 GROUND
GROUND	11	36 GROUND
NC	12	37 NC
NC	13	38 TERMPWR
NC	14	39 NC
GROUND	15	40 GROUND
GROUND	16	41 -ATN
GROUND	17	42 GROUND
GROUND	18	43 -BSY
GROUND	19	44 -ACK
GROUND	20	45 -RST
GROUND	21	46 -MSG
GROUND	22	47 -SEL
GROUND	23	48 -C/D
GROUND	24	49 -REQ
GROUND	25	50 -I/O

NOTES:

- Pin No. 12 to 14, 37 and 39 are not grounded.
- The connectors are of the shielded type.
- For details on the control commands, refer to the separate specifications manual.

2) Electrical specifications of SCSI

Output characteristics	The signals driven by SCSI equipment present the following output characteristics. True (LOW): VOL = 0.0 to 0.4 V DC IOL = 48 mA (0.5 V DC) max. False (HIGH): VOH = 2.5 to 5.25 V DC
Input characteristics	The signals driven by SCSI equipment present the following input characteristics. True (LOW): VOL = 0.0 to 0.4 V DC IOL = -0.4 mA (0.4 V DC) max. False (HIGH): VOH = 2.0 to 5.25 V DC

NOTES:

- As the SCSI interface is of the single-ended type, it should be terminated on both ends of the cable
- The maximum recommended length of an SCSI cable is 6 meters (20 feet) (including internal wiring).

Media Storage Capacity

DRM-3000

Capacities			Number OF Discs	Number of 50-disc Magazines	Number of Drives (when using flip unit)
Double DVD (TB)	DVD (TB)	CD (GB)			
3.01	1.50	208	320	6	2
2.54	1.27	176	270	5	4 (2)
2.07	1.03	143	220	4	6 (4)
1.60	0.80	111	170	3	8 (6)

Capacity values are calculated using DVD storage disc Single sided = 4.7GB.

And CD-R media = 650MB.

Flip Unit required for double sided media.

Hyper Magazine increases storage by 20 discs.

Accessories Or Installed Options



DRM-AF751
50-disc Magazine
With ID Memory



DRM-AL751
50-disc Lockable
Magazine
With ID Memory



DVD-D7563
DVD Reader Unit
DVD-ROM Max 6X speed
CD-ROM Max 32X speed



DRM-AH721
20-disc Hyper magazine



DRM-UF701
Disc Flip Unit

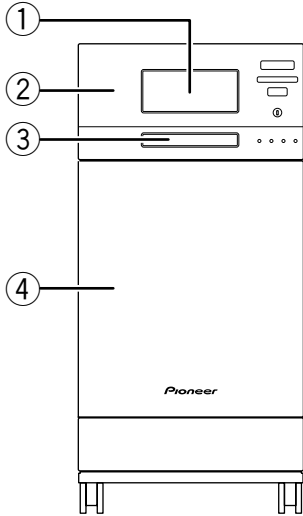


DVD-R7322
DVD Writer Unit
Write DVD-R (2X)
Write DVD-RW (1X)
Write CD-R (4X)
Read DVD-ROM (4X)

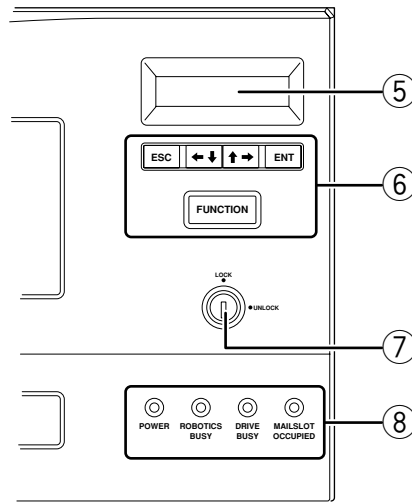
PANEL FACILITIES

FRONT PANEL

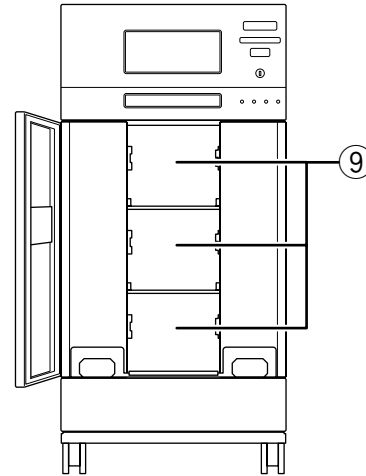
[Front]



[Control panel]



[Front access door INSIDE]



① 20-disc hyper magazine

② Control panel

③ Mailslot

④ Front access door

⑤ LCD message window

The backlight to the LCD message window is designed to automatically go into the dark whenever more than 1 minute passes without any operations being performed from the control panel.

⑥ Operation keys

These keys are used to change the display items on the LCD message window and to select setting fields or values. Note that a lock release key is required in order to become effective these keys.

Escape key (ESC):

The escape key is used to step back from the message layer currently being displayed (i.e., to return to the previous display) or to halt operations.

←↓:

This key is used to decrement displayed values or to move the display cursor down or to the left.

↑→:

This key is used to increment displayed values or to move the display cursor up or to the right.

Enter key (ENT):

The enter key is used to step forward from the message layer currently being displayed or to initiate a specified operation.

Function key (FUNCTION):

The function key must be pressed in order to enter the system administrator mode.

⑦ Lock/Unlock key switch

Inserting a lock release key into this switch and rotating it 90 degrees releases the operation lock and makes it possible to perform operations from the control panel.

⑧ Status indicators

POWER:

This indicator lights up whenever the power is on.

ROBOTICS BUSY:

This indicator lights up whenever a disc transport mechanism is in operation.

DRIVE BUSY:

This indicator lights up whenever one or more discs are being placed on each drives.

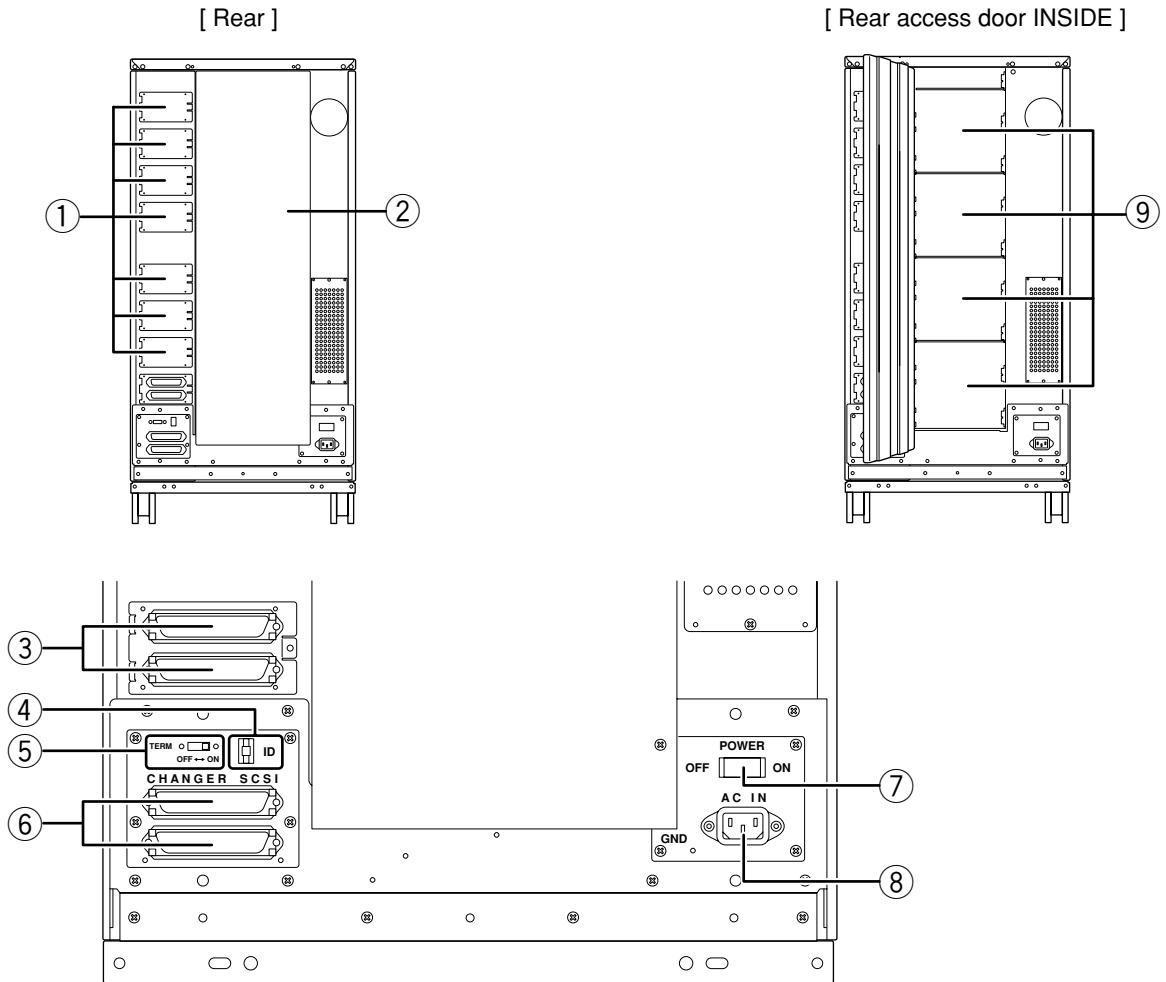
MAILSLLOT OCCUPIED:

This indicator lights up whenever a disc is placed in the closed mailslot.

⑨ Front bays

For use with disc magazines: M1 – M3

REAR PANEL



① Rear plates

These plates cover the space for attaching the connector panels.

② Rear access door

③ Drive SCSI ports (attached connector panel)

④ SCSI ID switch (ID)

This switch is used to assign the changer SCSI ID. If you would like to decrement the displayed SCSI ID, push the small switch just above the numeric display by a nib. And if you would like to increment, push the small switch just below the numeric display. Note that SCSI ID is set to '6' at the time of shipment.

⑤ SCSI termination switch (TERM)

This switch is for SCSI termination. Note that this switch is set ON at the time of shipment and it must be kept ON during the changer installation. But when the SCSI bus connection is completed and the changer is not the last device on the SCSI bus, it must be set OFF certainly.

⑥ Changer SCSI ports (CHANGER SCSI)

⑦ Power switch (POWER)

This switch is used to turn the power to the changer on and off.

⑧ Power inlet (AC IN)

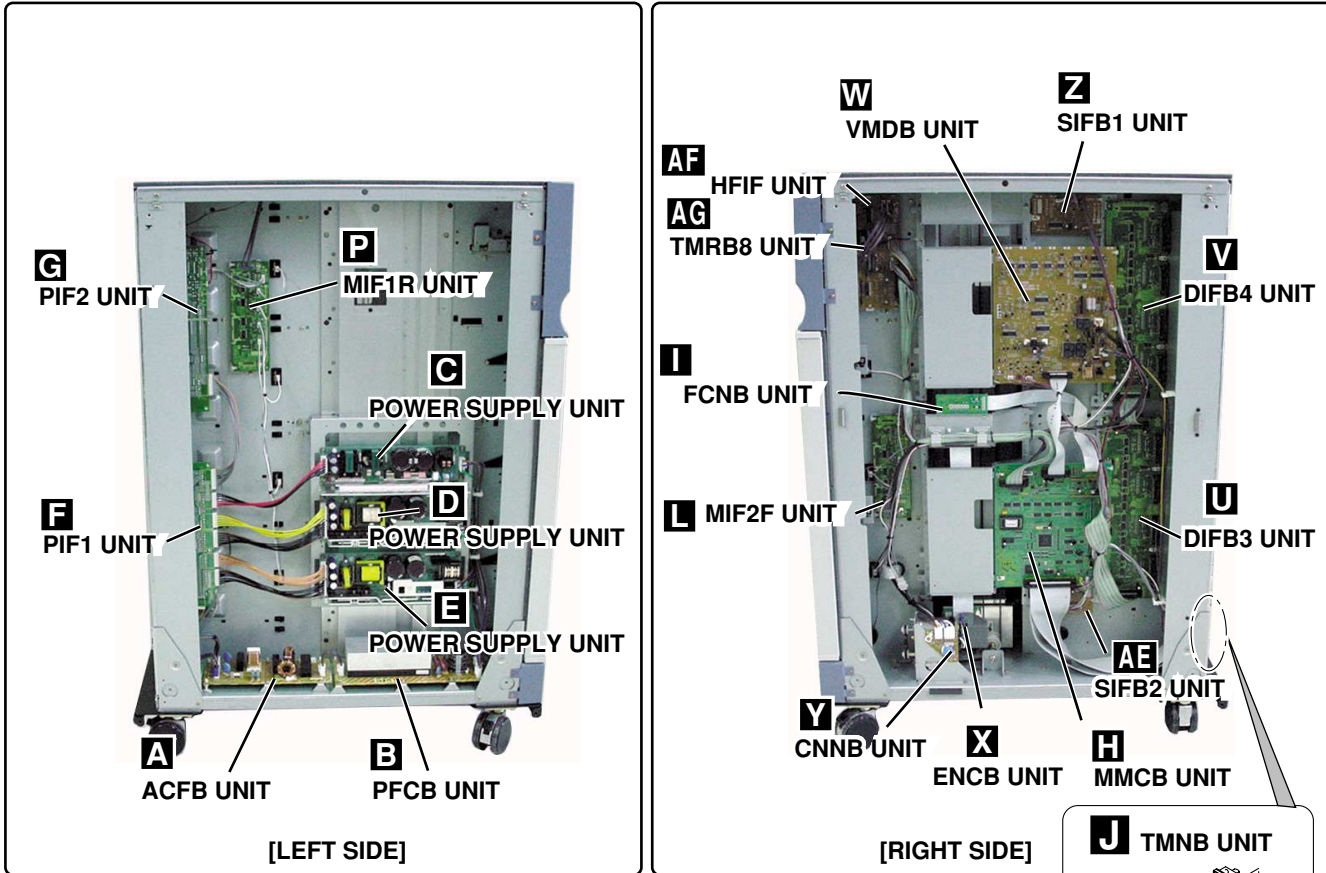
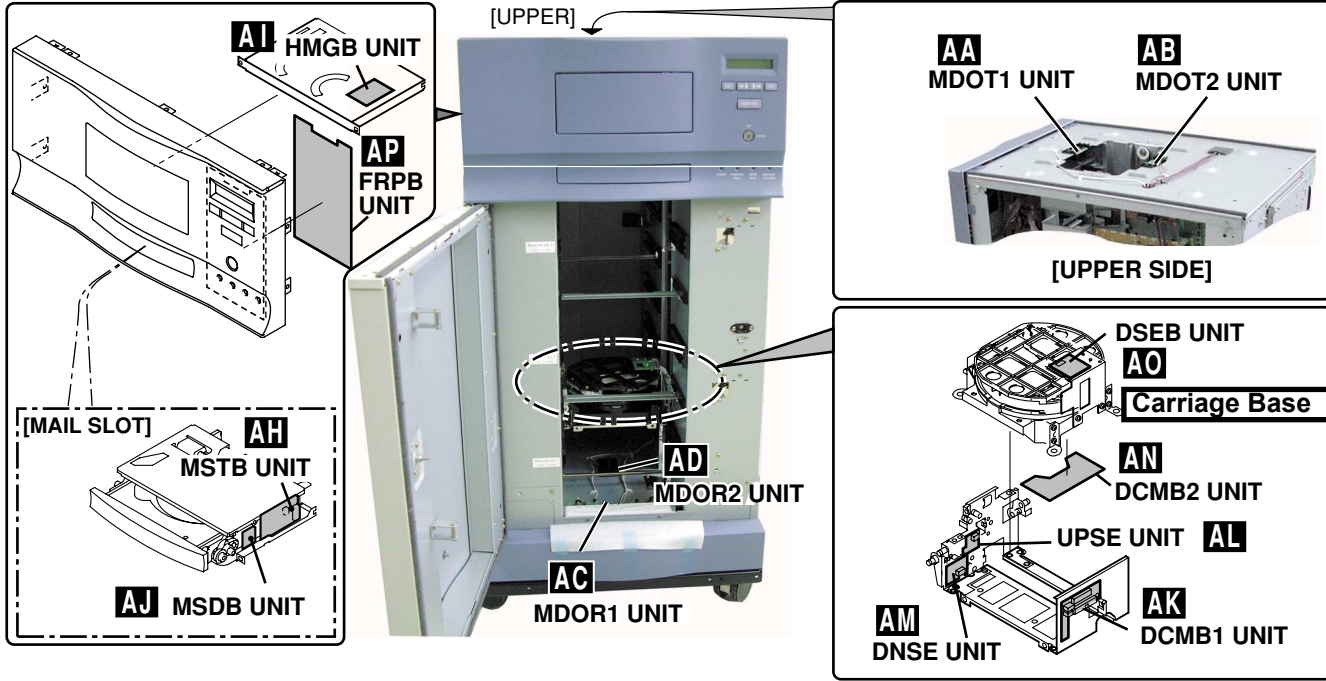
The power cord is inserted into this power inlet. (Note that you should always be sure to use only the power cord provided with your changer.)

⑨ Rear bays

For use with disc magazines : M4 - M7.

For use with optional units/modules : Bays #1 - 8.

PCB LOCATION



Refer to Service Manual RRV2734 for complete parts list.

PCB Part Numbers

Location	Description	Part Number
A	ACFB	DWR1316
AA	MD0T1	DWX1989
AB	MD0T2	DWX1988
AC	MD0R1	DWX1992
AD	MD0R2	DWX1991
AE	SIFB2	DWX1990
AF	HFIF	DWX1983
AH	MSTB	DWX1984
AI	HMGB	DWX1986
AJ	MSDB	DWX1985
AK	DCMB1	DWX1947
AL	UPSE	DWX1951
AM	DNSE	DWX1950
AN	DCMB2	DWX1948
AO	DSEB	DWX1949
AP	FRPB	DWX1996
B	PFCB	DWR1315
C	POWER SUPPLY 5V	DWR1367
D	POWER SUPPLY 12V	DWR1368
E	POWER SUPPLY 24V	DWR1369
F	PIF1	DWR1317
G	PIF2	DRW1376
H	MMCB	DWX2268
I	FCNB	DWX1946
J	TMNB	DWX1994
K	IDSB	DWX1995
L	MIF2F	DWX1959
P	MIF1R	DWX1954
U	DIFB3	DWX1956
V	DIFB4	DWX1957
W	VMDB	DWX1981
X	ENCB	DWX1982
Y	CNNB	DWX1993
Z	SIFB1	DWX2274

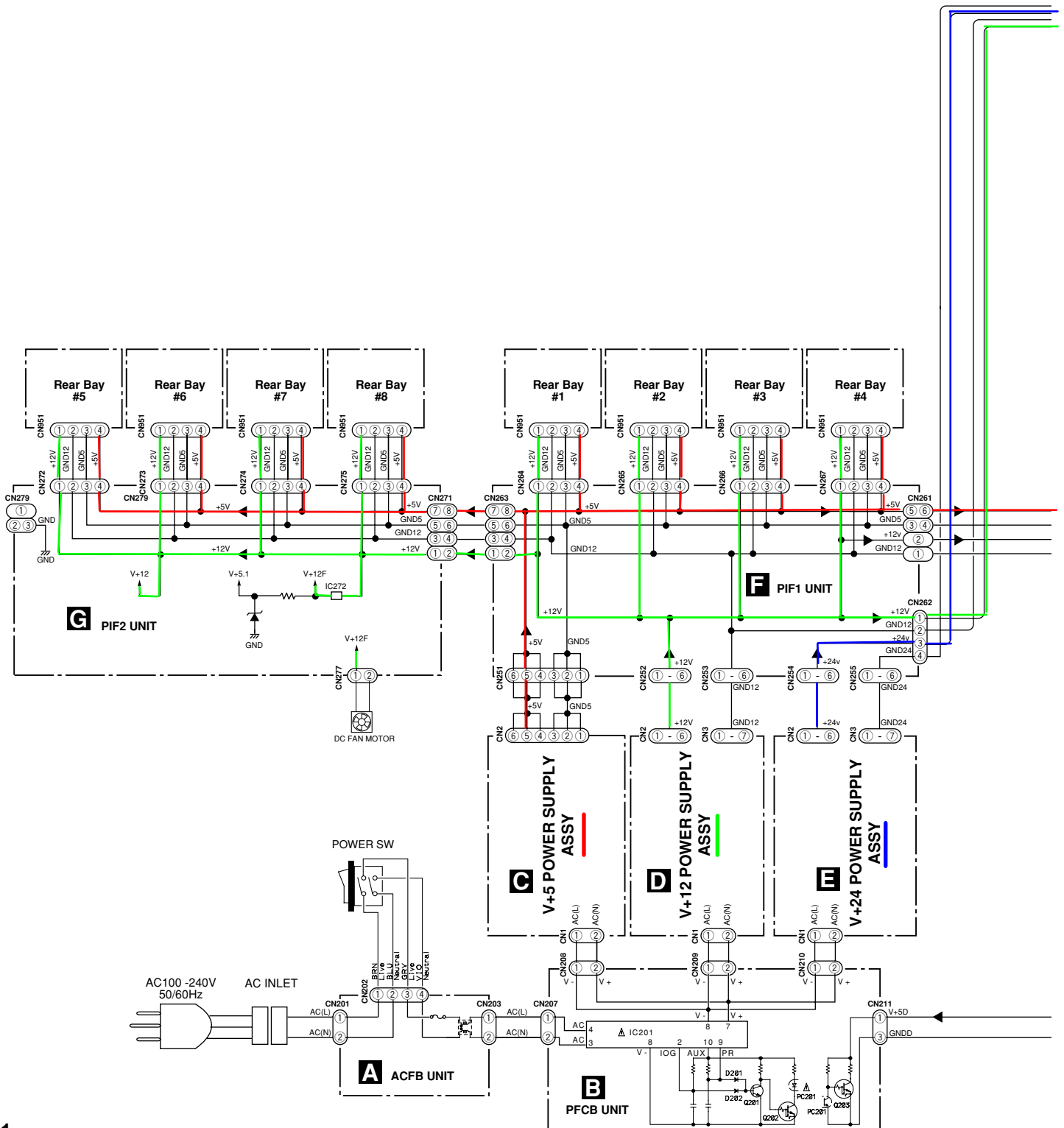
Carriage Base Service Parts:

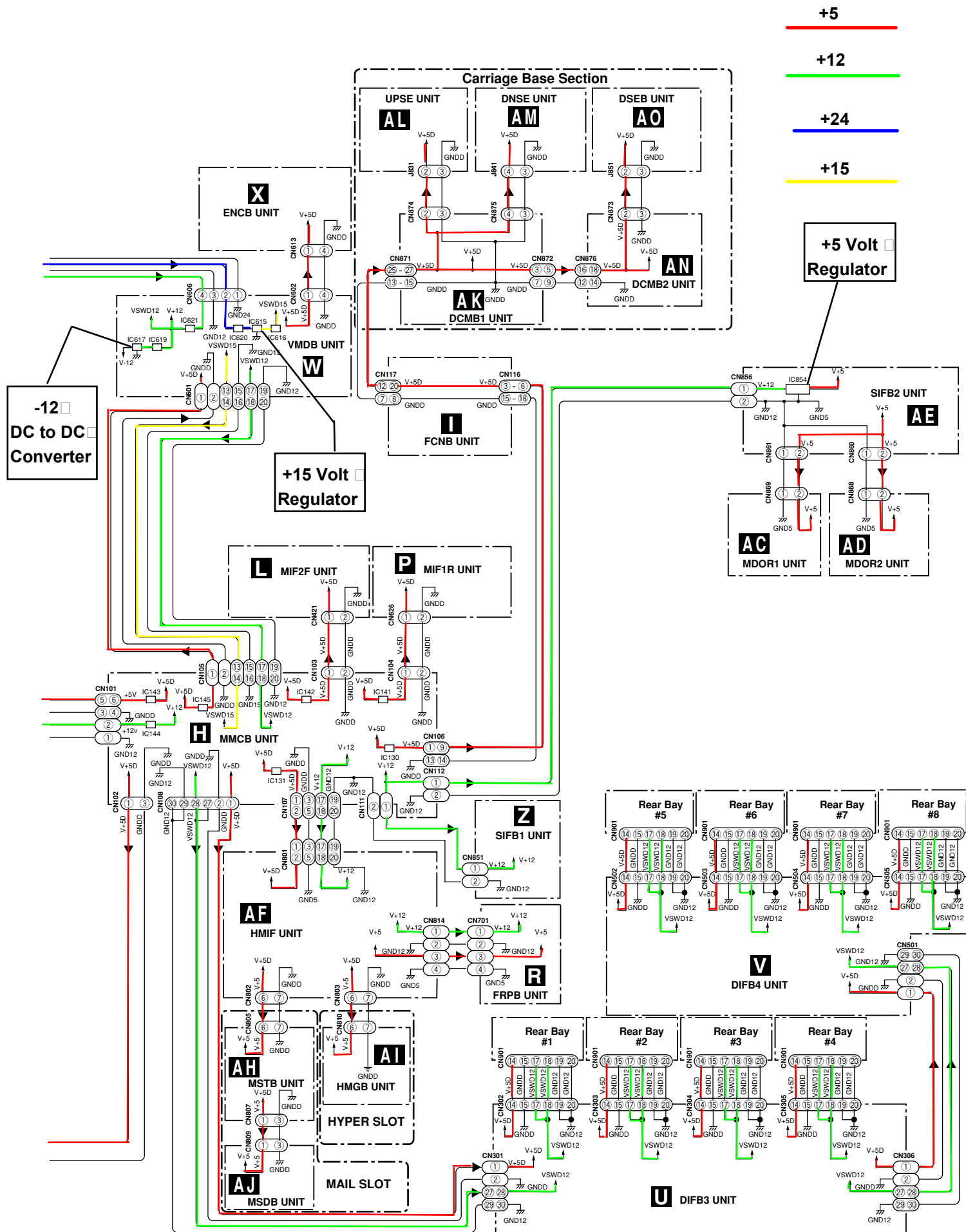
Carriage Base Assy DXX2451

Chuck Assy DXX2348

BLOCK DIAGRAM

POWER SUPPLY SIGNAL ROUTE



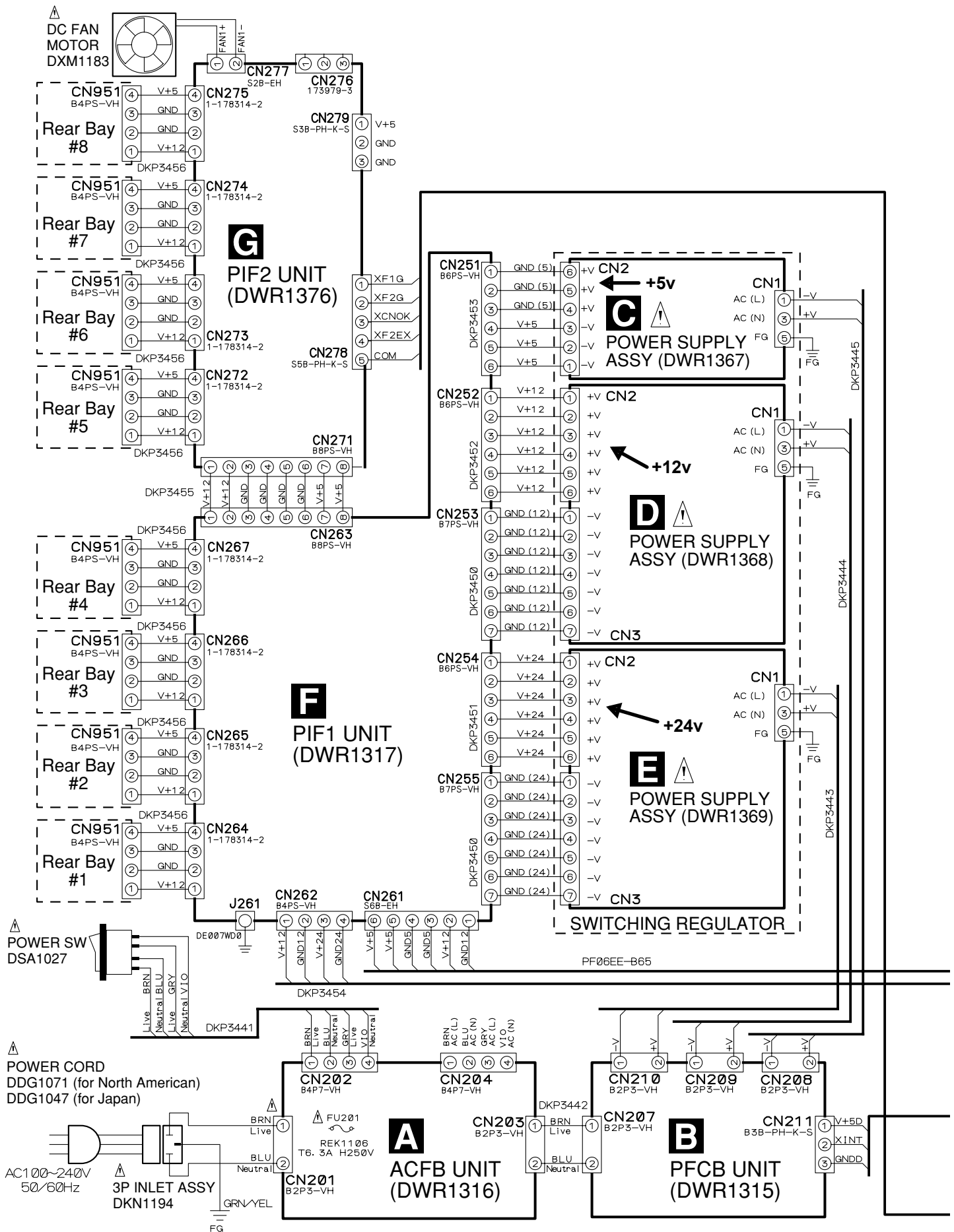


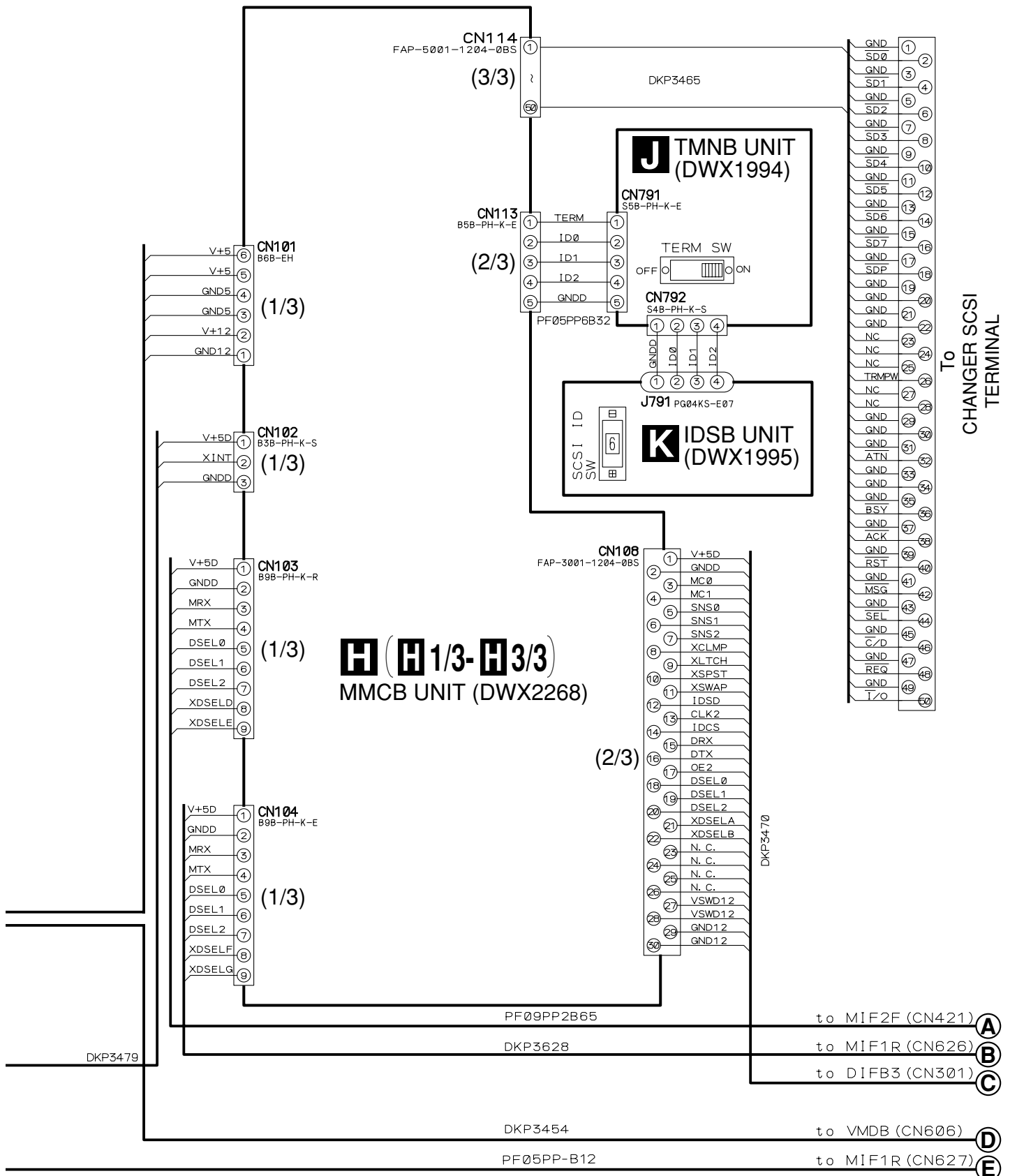
Circuit Board Descriptions

- (A) ACFB unit.** Connects to the AC line cord input and power switch. Contains a AC line filter and main 6.3 amp 250 volt fuse.
- (B) PFCB unit.** Power Factor Improvement Module. Receives AC input from ACFB unit and provides the AC supply for the three power supplies. (C), (D) and (E).
- (C) +5 Volt Power Supply.** Supply for PCB units and bays.
- (D) +12 Volt Power Supply.** Supply for PCB units and bays.
- (E) +24 Volt Power Supply.** Supply for VMDB unit (Vertical Motor Drive board).
- (F) PIF1 unit.** Power interface assembly for rear bays 1~4.
- (G) PIF2 unit.** Power interface assembly for rear bays 5~8, DC fan power connector and fan FG circuit.
- (H) MMCB unit.** Main Microprocessor Circuit Board. This unit contains the main CPU, SCSI interface, Flash Rom and integrated circuit protectors for +5 and +12 volt supplies.
- (I) FCNB unit.** Interconnect from MMCB to DCMB1 units. Contains the up/down interrupter LED's for vertical drive motor stop position. (Fixed).
- (J) TMNB unit.** Contains the SCSI termination switch and provides the feed through from the MMCB to the IDSB units.
- (K) IDSB unit.** SCSI ID selector for the changer.
- (L) MIF2F unit.** Touch Memory Interface Assembly. Connects from touch memory units (M, N and O) to the MMCB unit. (See service manual for locations of magazine touch memory units).
- (P) MIF1R unit.** Touch Memory Interface Assembly. Connects from touch memory units (Q, R, S and T) to MMCB unit.
- (U) DIFB3 unit.** Rear Bay 1~4 SCSI Terminal Interface.
- (V) DIFB4 unit.** Rear Bay 5~8 SCSI Terminal Interface.
- (W) VMDB unit.** Vertical Motor Drive Board. Contains the vertical motor drive circuit, door switches and front/rear door plunger drivers.

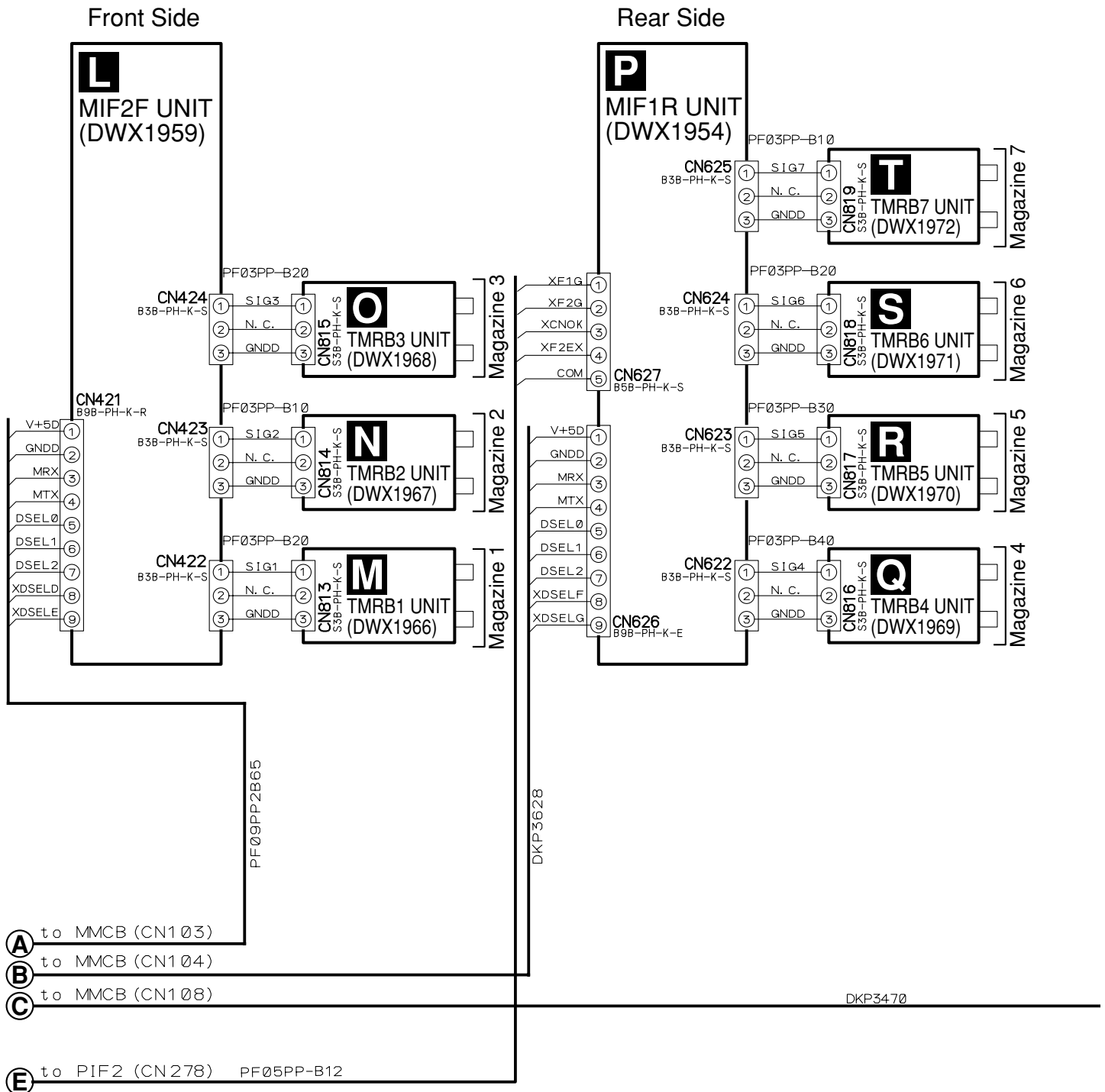
- (X) ENCB unit. Up/Down rotation detector. Connects to the VMDB unit.**
- (Y) CNNB unit. Vertical Motor Connector Assembly.**
- (Z) SIFB1 unit. Disc Detect Sensor Adjustment Board.**
- (AA) MDOT1 unit. Front Disc Sensor LED Board.**
- (AB) MDOT2 unit. Rear Disc Sensor LED Board.**
- (AC) MDOR1 unit. Front Disc Sensor (photo coupler).**
- (AD) MDOR2 unit. Rear Disc Sensor (photo coupler).**
- (AE) SIFB2 unit. Sensor interface board. Connects to disc sensors, door switches and the MMCB unit.**
- (AF) HMIF unit. Hyper Magazine Interface Board. Signal interface to and from the MMCB unit.**
- (AH) MSTB unit. Mail slot tray motor connector, tray open/close switch and rotation encoder connector.**
- (AI) HMGB unit. Hyper magazine loading motor connector, sensor release switch and load/unload switch connector.**
- (AJ) MSDB unit. Mail Slot Rotary Encoder.**
- (AK) DCMB1 unit. Carriage Base Main Interconnect Assembly.**
- (AL) UPSE unit. Carriage base up sensor assembly.**
- (AM) DNSE unit. Carriage base down sensor assembly.**
- (AN) DCNB2 unit. Carriage base loading motor connector and disc detect LED assembly.**
- (AO) DSEB unit. Carriage base disc detector adjustment assembly.**
- (AP) FRPB unit. Front Panel PCB Board. Function LED's, function button assembly, LCD module connector and key lock interface.**

OVERALL WIRING DIAGRAM (1/3)



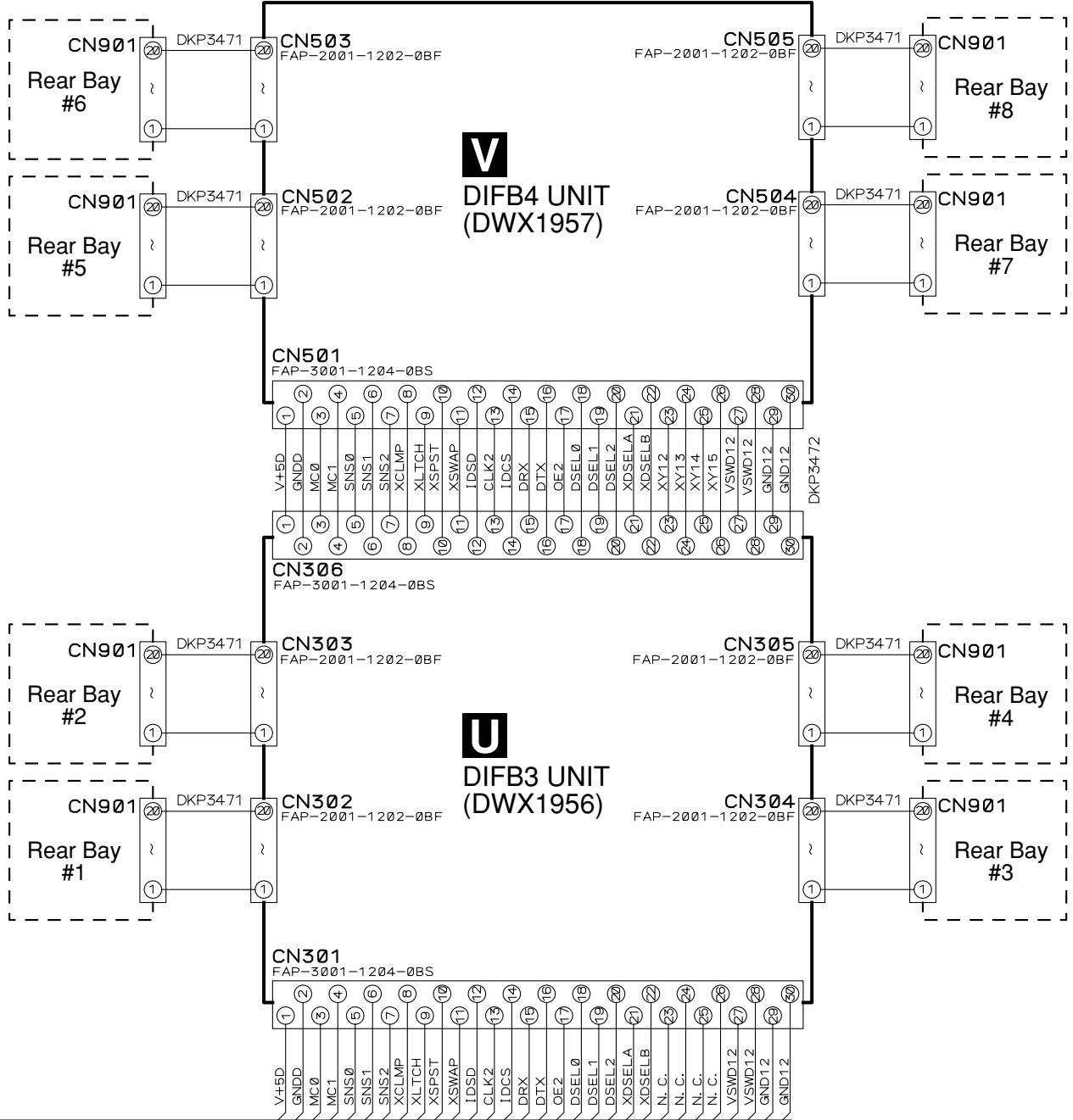


OVERALL WIRING DIAGRAM (2/3)

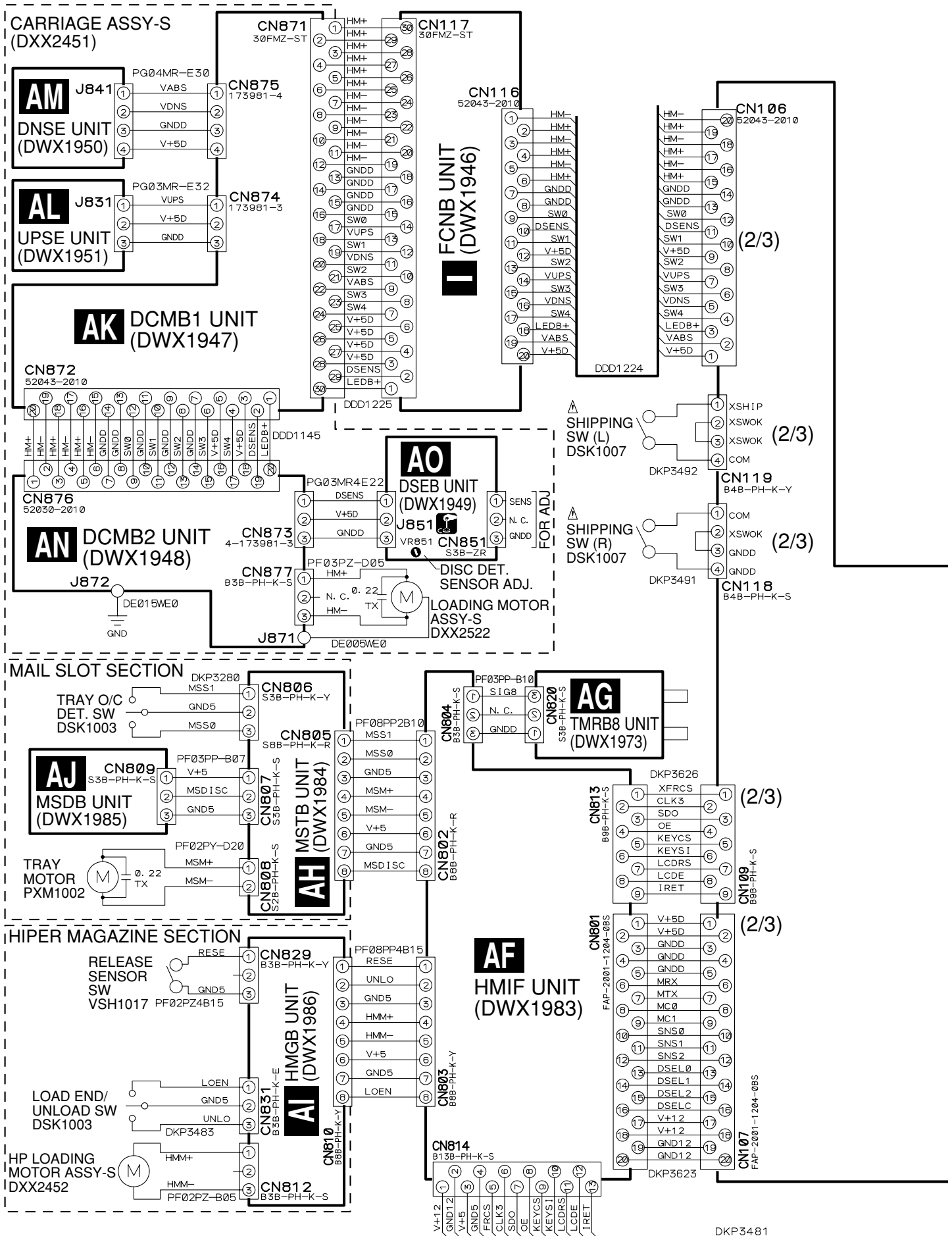


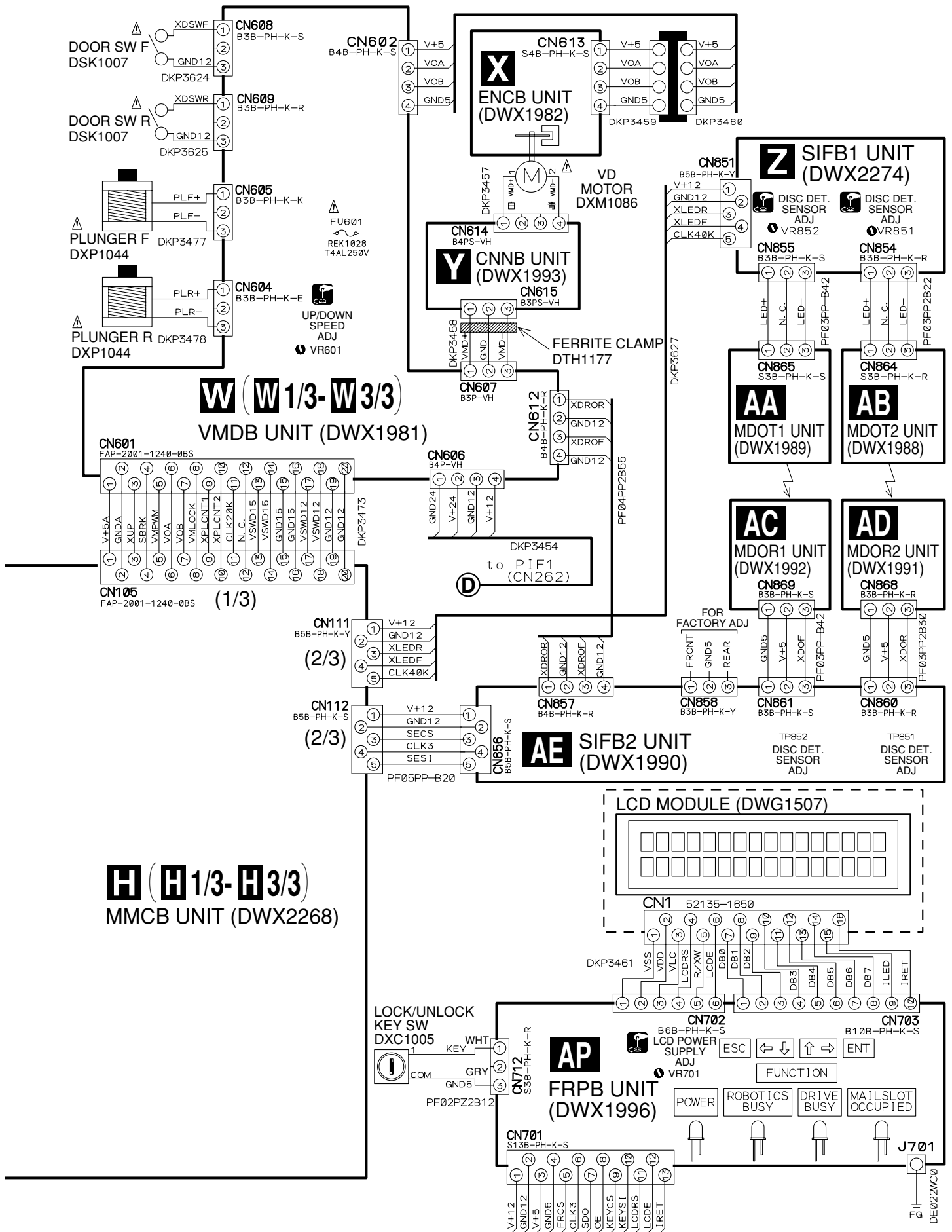
CN302, 303, 304, 305, 502, 503, 504, 505

- | | |
|-----------|------------|
| 1. CM*C0 | 11. XTSNS* |
| 2. CM*C1 | 12. RX** |
| 3. CL*S0 | 13. TX** |
| 4. CL*S1 | 14. V+5D |
| 5. XCLMP* | 15. GNDD |
| 6. XSPST* | 16. XSWAP* |
| 7. SNS* | 17. VSWD12 |
| 8. ID*-0 | 18. VSWD12 |
| 9. ID*-1 | 19. GND12 |
| 10. ID*-2 | 20. GND12 |



OVERALL WIRING DIAGRAM (3/3)

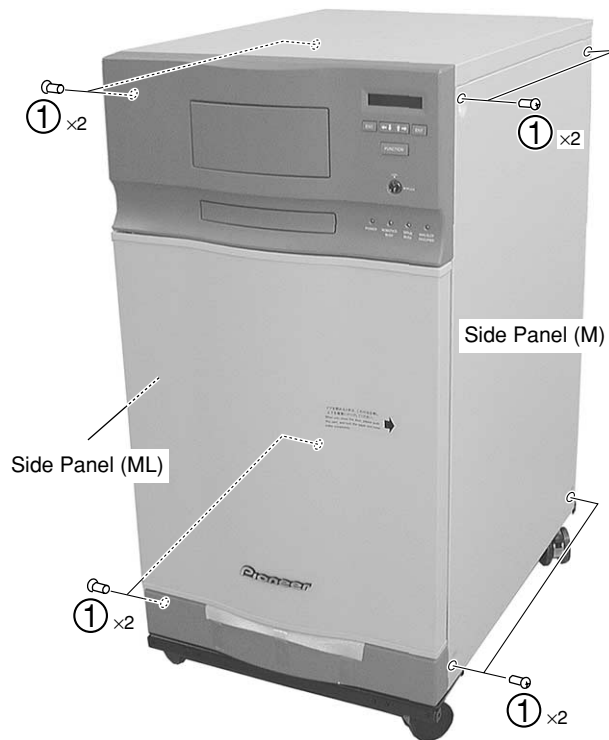




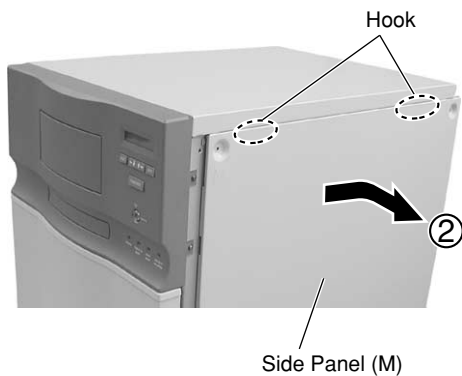
DISASSEMBLY

Side Panel

- ① Remove the eight screws.



- ② Remove the side panel (M) and (ML) after sliding to the sideways.



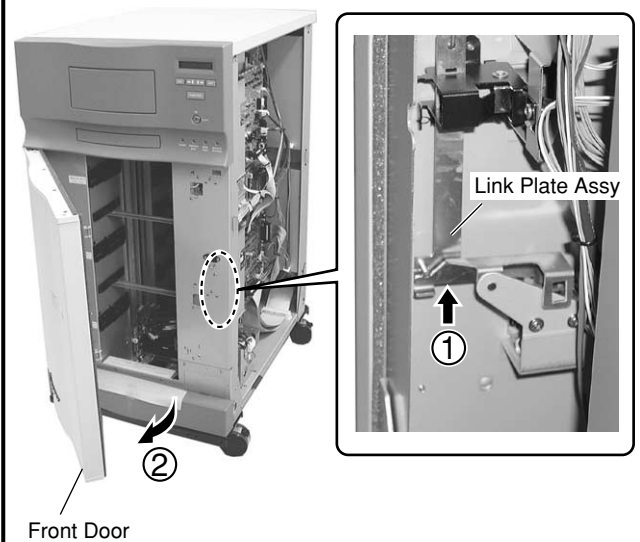
Note: Remove the side panel (ML) with the same way.



Front Door

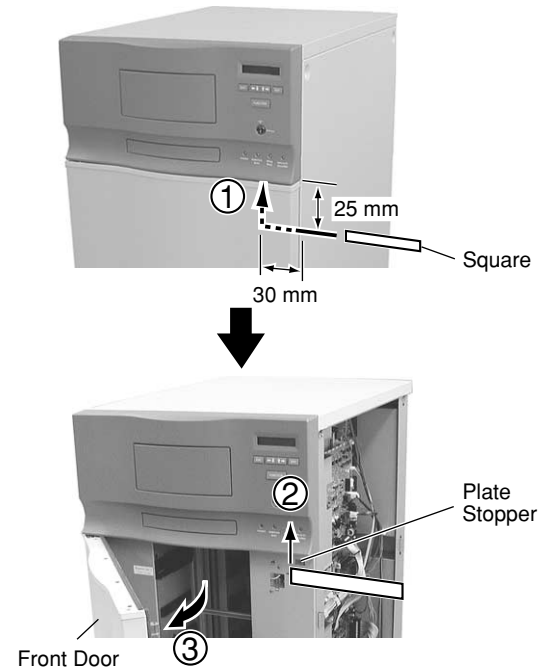
Opening the Front Door Manually (1)

- ① Lift the link plate assy.
- ② Open the front door.

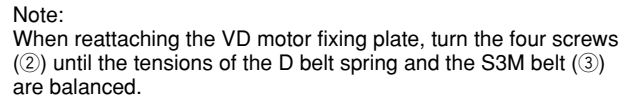


Opening the Front Door Manually (2)

- ① Insert a thin plate, such as a square, through the gap between the front door and the body, horizontally about 30 mm, and move the thin plate upward until it reaches the plate stopper.
- ② Push up the plate stopper until it unlatches.
- ③ The front door can be opened manually.



- ① Remove the side panel (M), located at right viewed from the front.
- ② Remove the four screws.
- ③ Remove the D belt spring, S3M belt and the two connectors.



-
- Rear Door
- 3

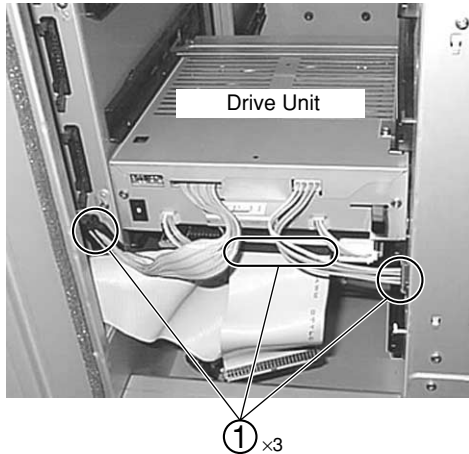


- ① Attach the VD motor with two screws (PMB30P060FMC) and a motor-sleeve screw (AMZ30P080FMC). Run these screws in but don't tighten them yet.
- ② Put the S2M belt.
- ③ Slide the screws (①) toward ④ and tighten.

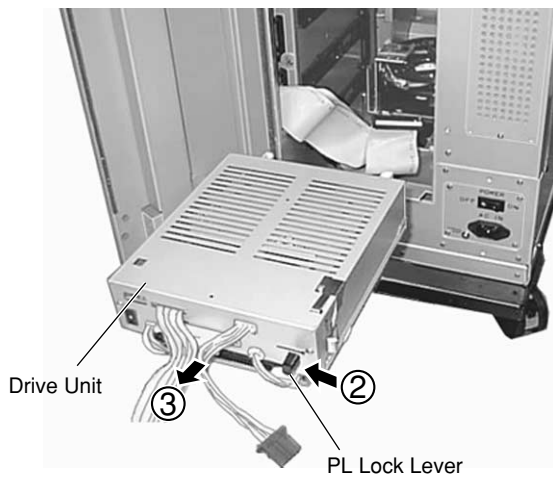


Drive Unit (Option)

- ① Remove three connectors.



- ② Release the PL lock lever.
- ③ Remove the drive unit.



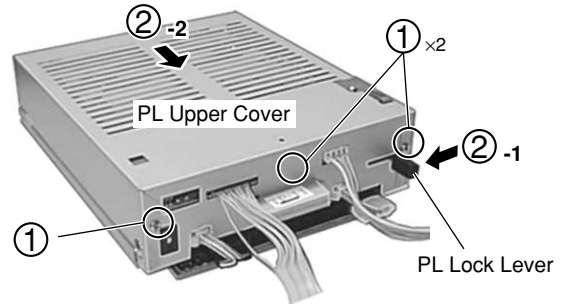
Reference:

The reader drive can be installed in any slot. (You can install as many optional reader drives as there are slots available.)

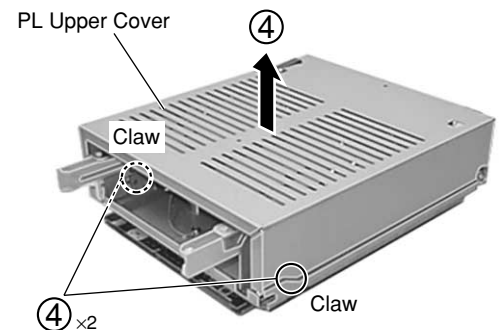
Removing the PL Upper Cover of the Drive Unit

The PL upper cover is fixed with claws at the front and with screws at the rear. To remove the PL upper cover, proceed as follows. Failure to do so may damage the claws.

- ① Remove the four screw.
- ② While pressing the PL lock lever toward RELEASE, slide the PL upper cover backward. (It will stop after sliding approx. 1 cm backward.)



- ③ Press and bend the front part of the PL upper cover from the left and right sides to unhook the claws, then lift up the cover. (Do NOT try to lift up the cover forcibly with the claws unhooked. This may damage the claws and make it impossible to reattach the cover.)
- ④ Remove the PL upper cover.

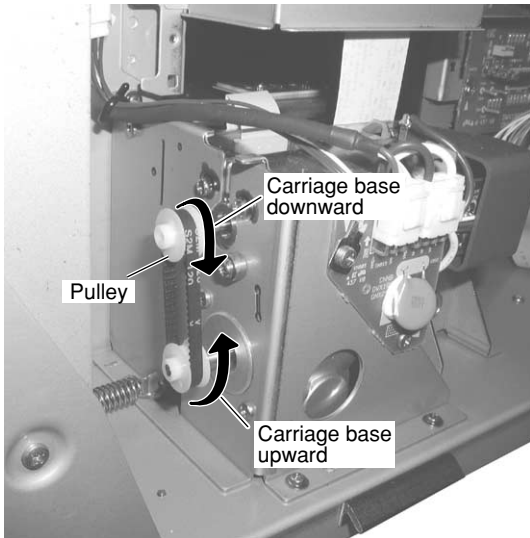


- When reattaching the cover, reverse the above procedures. (Place the cover approx. 1 cm backward and hook the claws, then slide the cover forward.)
- Observe the driver unit from the rear to check that the claws are firmly engaged.

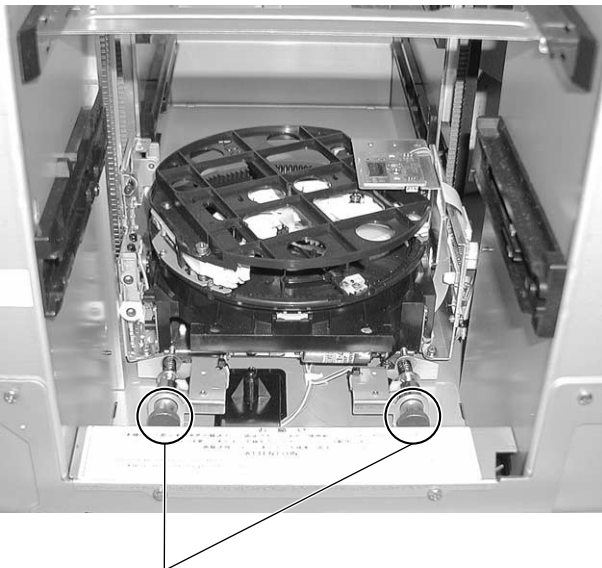
Moving the Carriage Base Up and Down Manually

- ① Open the front door.
- ② Remove the side panel (M), located at right viewed from the front.
- ③ Rotate the pulley with your fingers clockwise to move the carriage base downward, and counterclockwise to move it upward.

Caution: If the front door switch is set to ON while the power is on, the motor shaft will start rotating.



For Shipping Stopper Screw of the Carriage Base

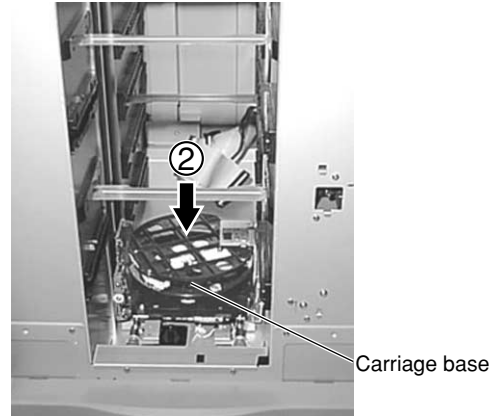


For safety, when moving the unit, fix the carriage base by the shipping stopper screws.

Removing the Carriage Base

- ① Open the front and rear doors. Turn off the power.
- ② Move the carriage base down until it touches the under chassis by manually rotating the shaft of the elevator motor.

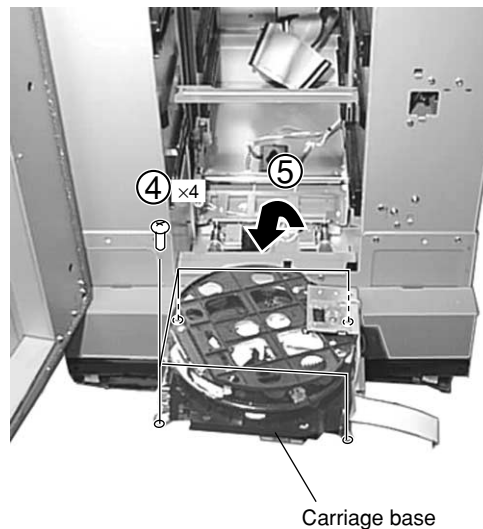
Caution: If the carriage base does not touch the under chassis, the table of the carriage base will be deformed.



- ③ Remove the Flexible flat cable (F.F.C)



- ④ Remove the four screws and remove the carriage base.



Reattaching the Carriage Base

Reattach the carriage base with the four screws with the table of the carriage base touching the under chassis.

Caution: Be sure to proceed with this step with the carriage base touching the under chassis.

Otherwise, the table of the carriage base will be deformed.

Entering Adjustment Mode

Refer to "6.1 Mechanism adjustment" and "6.2 Adjustment for mechanical operations".

Maintenance of the Carriage Base

(1) Removing the Chuck Assy

1. Turn off the power.
2. Slide the chuck toward you by rotating the loading motor.
3. Lifting up the upper plate, pull the chuck assy from the shaft of the planetary arm.

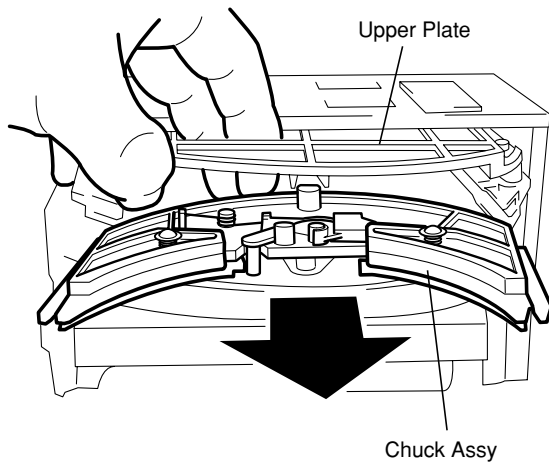


Fig. 1

3. Unlock the lock plate by sliding the plate with its side lifted.

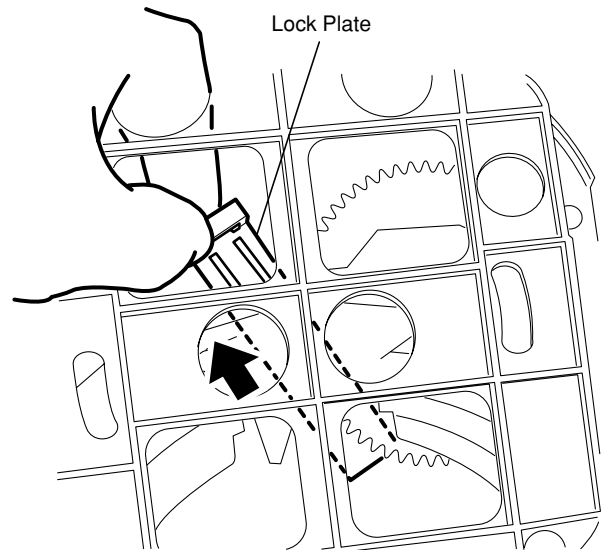


Fig. 3

(2) Removing the Outer table

1. Remove the carriage base. (Refer to the section "Removing the Carriage Base".)
2. Remove two fixing screws ① and remove the sensor stay.

Note : Make sure not to damage the wire. Also, be sure to remember the layout of the wire before removing.

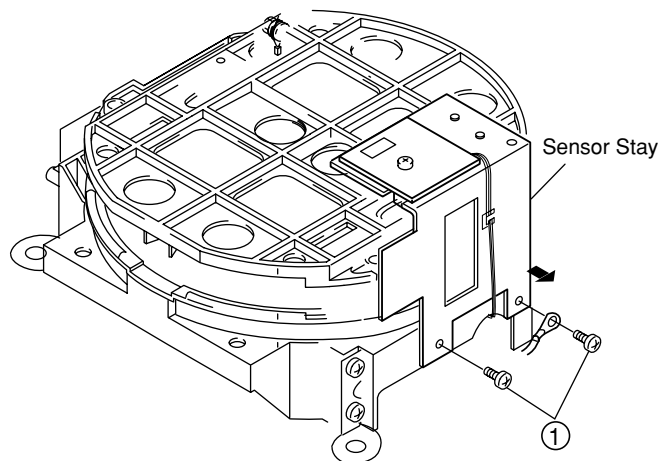


Fig. 2

4. Grip the chuck assy and the upper plate together so that the chuck assy will not move, and pull them out toward you.

Note: Pull out the chuck assy and the upper plate slowly straight toward you so that the steel ball will not fall. After pulling them out, remove the steel ball.

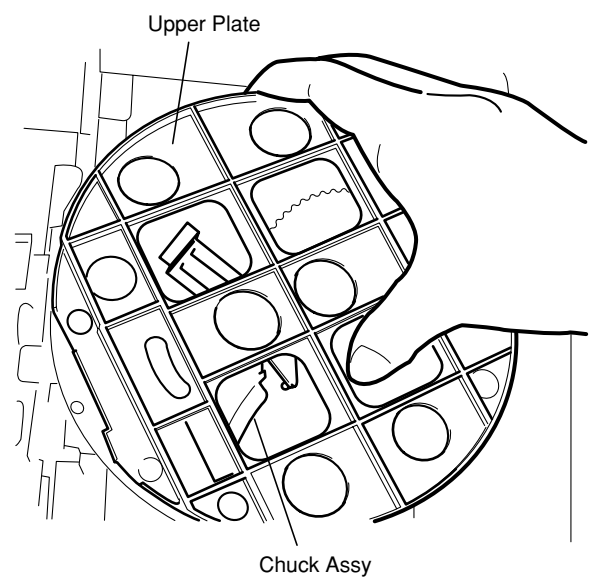


Fig. 4

(3) Attaching the Inner Table Assy

1. Mount the inner table assy so that the tip of the planetary arm assy is centered on the cutout of the outer table.

Note: Make sure that the inner table assy is not mounted on the flange of the outer table.

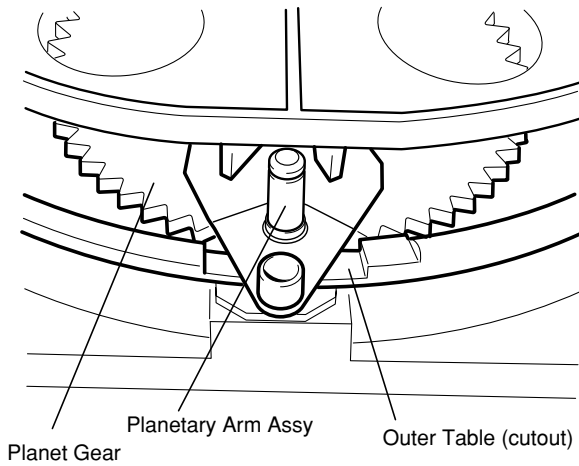


Fig. 5

(4) Mounting the Outer table

1. Align the largest, key-shaped axis of the H cam gear of the carriage base and two SW arms C with the ▲ marks.
2. Turn the inner table of the outer table completely counterclockwise and keep it in that position.

Note: Grip the chuck assy and the upper plate firmly so that the inner table will not return to its original position under its spring tension.

3. Insert the steel ball into the slot of the outer table.
4. Align the key-shaped slot of the inner table with the key-shaped axis of the H cam gear, and mount the outer table.

Note: While mounting the inner table, press it on so that the inner table will not pop up from the outer table.

5. Slide the lock plate, and lock it.

Note: Check that the lock plate is firmly locked by lifting the outer table.

6. Rotate the outer table one turn by rotating the loading motor. If the SW C arms are not seated in the cam grooves, the rotation will be locked midway. In this case, remove the swing-full assy and repeat steps 5 through 7.
7. Lay out the wire of the sensor stay and screw on the sensor stay.

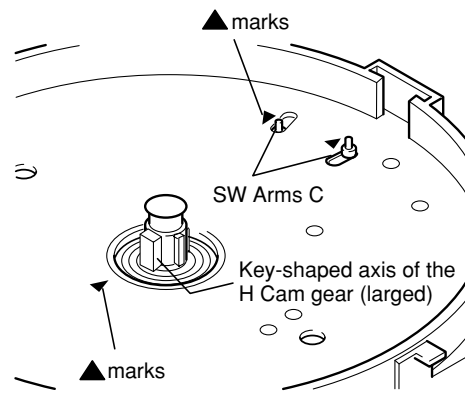


Fig. 6

(5) Attaching the SW Arms

1. Attach the SW arms as indicated in Fig. 7.

Note: There are three SW arms, labeled A, B and C.

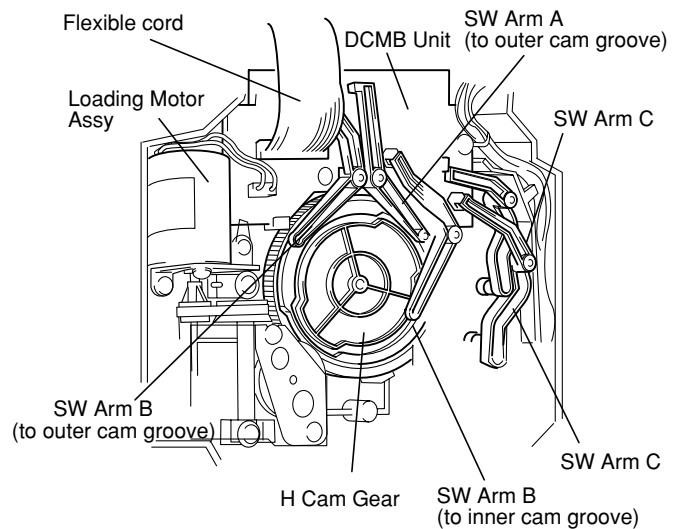


Fig. 7

INFORMATION ON MAINTENANCE

[NOTES ON SERVICING]

■ Cleaning the parts

• Fan

Clean the fan before shipping. For cleaning, the following tool is required:

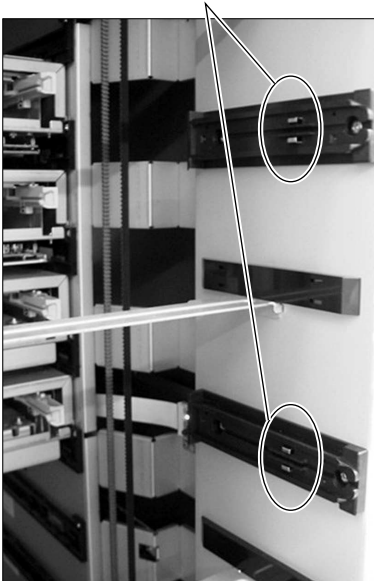
- Cleaning paper GED-008

■ Cleaning the chuck on the carriage base

1. Open the door. Manually rotate the Loading Motor located at the lower part of the carriage base until the chuck comes to the front-panel side.
2. Turn the unit OFF.
3. Remove dust and dirt around the D-Guides for loading discs and the Chuck Guide on the carriage base.

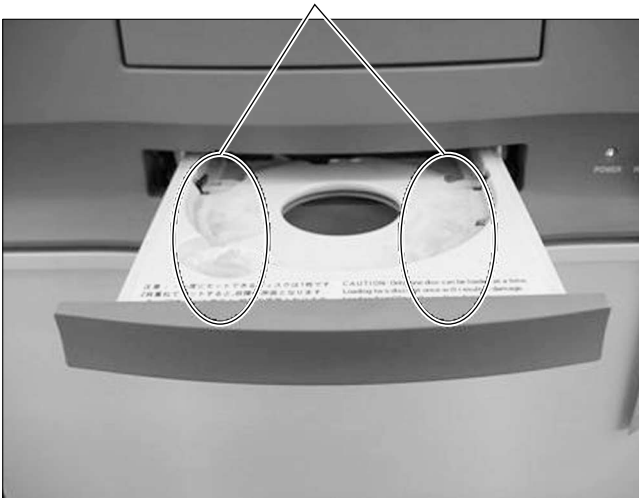
■ Cleaning the Touch block of the Touch Memory

- Clean the Touch block of the Touch Memory.



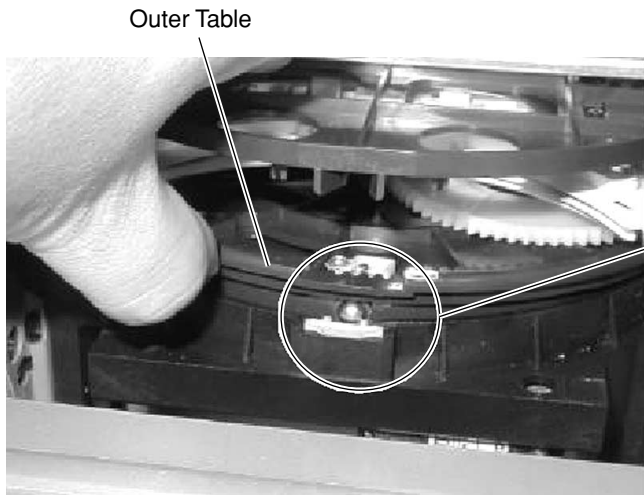
■ Cleaning the Mailslot tray block

- Eject the Mailslot tray block in Test mode and clean it.



■ Lubricating the carriage base

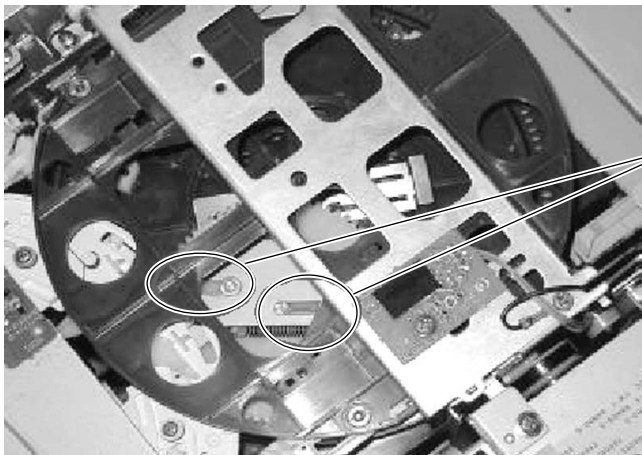
- Lubricating the outer table



Raise the Outer Table as shown in the photo, and apply grease (GYA1001) around the steel ball, taking care not to overflow.

■ Lubricating the Planet Arm Assy

- Rotate the Loading Motor manually until the D-Guides and the chuck come out sufficiently enough lubrication at the rear side. Care must be taken so that they do not fully protrude.



Apply grease (GYA1001) to the oval-shaped holes (inside the circles in the photo) on the Planet Arm Assy.

ADJUSTMENTS

MECHANISM ADJUSTMENT

Tools for Adjustment

- Ⓐ : Phillips screwdriver (nominal No. 2 for M3 cross-recessed head machine screws)
- Ⓑ : Phillips screwdriver (nominal No. 3 for M2.6 cross-recessed head machine screws)
- Ⓒ : Flat-head screwdriver (nominal 5.5 × 75; for M2.6 slotted head machine screws)
- Ⓓ : Hexagonal wrench (nominal 2.5 for M3 hexagon socket head cap screws)
- Ⓔ : Hexagonal wrench (nominal 2 for M2.6 hexagon socket set screws)
- Ⓕ : Door key
- Ⓖ : Screw-fixing adhesive
[Screw-fixing adhesive #300UB: ZBA-300UB]
- Ⓕ : Adjustment disc [GGF1287]
- Ⓖ : Adjustment filter [GGF1287]
- Ⓖ : Flat-head screwdriver for volume adjustments
(2.4mm, non-conducting type or an equivalent)
- Ⓖ : Adhesive (Arontite R: ZBA-UR)
- Ⓖ : Magazine for 50 discs (DRM-AF751)[GGF1435]

Indications Ⓐ to ① at the end of paragraphs in the following indicate the tools to be used in the respective steps.

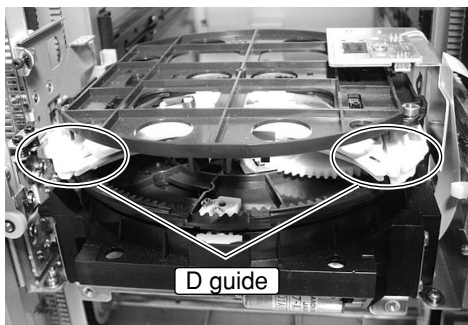
Preparations for Adjustment

• For adjustments of the mechanical operations

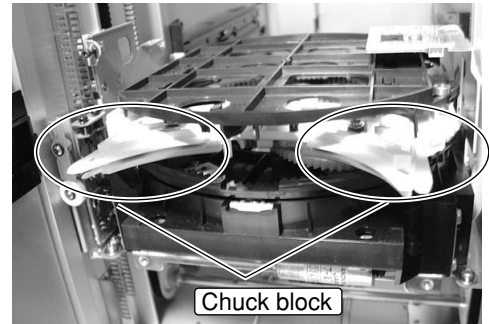
- (1) Remove the side panel (right side) and top panel. Ⓐ
- (2) Open the front door and pull out the magazines. Ⓕ

Caution: Be careful when performing this step, because this unit operates at a high speed.

- * As adjustments are to be performed with visual observation, set the unit in a well-lit place, such as under a fluorescent lamp.
- * Note that the manual elevating operation mode of the Test mode.
(Diag → Robotics → Individually) activates even when the D guides have been protruded.



- * Sufficient care must be taken as the chuck block is protruded if you rotate the turntable clockwise in manual loading operation of the Test mode (Diag → Robotics → Individually). It can cause damage if protruded in a location other than the disc rack and player.



• For sensitivity adjustment of the carriage base disc sensor

- (1) Remove the side panel (right side) and the top panel. Ⓐ

• For sensitivity adjustment of the magazine disc out-of-position sensor

- (1) Remove the side panel (right side) and the top panel. Ⓐ
- (2) Open the front door and pull out the under magazine. Ⓕ

Adjustment Methods

- The figures in brackets, such as [001], in the following represent the position of the carriage base displayed in the lower row of the mode indicator when you move it up or down operation mode.
- To move the carriage base up or down by hand, remove the side panel (right side) and turn the pulley or the belt of the vertical drive motor counterclockwise for upward movement, and clockwise for downward movement.

(Refer to "Moving the carriage base up or down manually " of IN DISASSEMBLY.

• How to enter Test Mode

See TEST MODE."

ADJUSTMENT FOR MECHANICAL OPERATIONS

Height Adjustment of the D Guides L and R

- Purpose : To adjust the top height of the D guides with respect to the reference surface of the carriage base.
- Method : Turn the D guide adjustment screw (DG height pin) on the carriage base.
- Contents : Adjust the top heights of the D guides L and R on the carriage base.
Adjust the upper surface of the D guides to 31 ± 0.2 mm higher than the reference surface of the carriage base.
- Preparation : Press the Door SW to cancel the operation restriction.
Enter Manual elevating operation mode of the Test mode (Diag → Robotics → Individually).
- Adjustment point: DG height pin

• Left Side

- (1) Move the carriage base to a position (around [75] to [100]) which permits it to be seen from the front and the loading motor to be rotated.
- (2) Rotate the turntable counterclockwise in Manual operation mode (Test → Diag → Robotics → Individually).
Caution: Do not turn it clockwise to avoid damage.
- (3) Stop the rotation when the turntable has been turned about 70 degrees from the front.
- (4) Using a measuring device, confirm that the distance between the upper surface of the carriage base and the upper surface of the D guide is 31 mm.
If not, adjust the D guide adjustment screw. ㉔
- (5) Lock the screws when the adjustment is completed. ㉕

• Right side

- (1) As with the left side adjustment, rotate the turntable counterclockwise and stop it when it has been rotated about 290 degrees from the front.
- (2) The subsequent procedures are the same as for the left side adjustment.

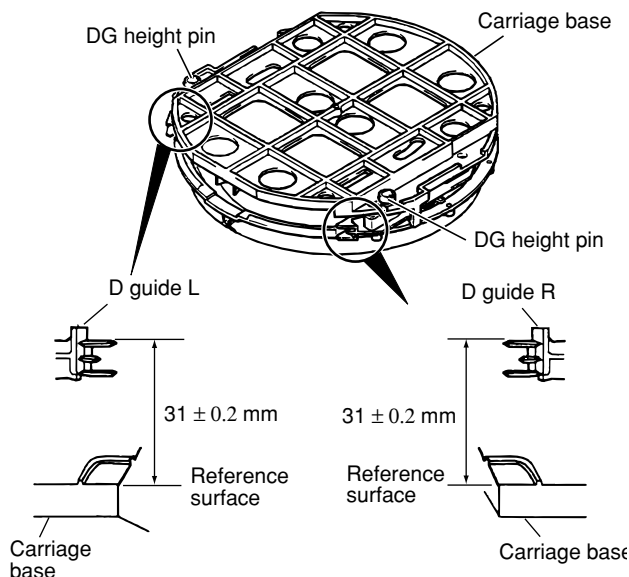


Fig. 1 Height adjustment of the D-guides

Right and Left Adjustment of the Carriage Base

- Purpose : To adjust the carriage base so that it becomes horizontal to the main unit.
- Method : Move up or down the belt stopper which connects between the elevator belt (on the right side) and the carriage base with the eccentric bushing.
- Contents : Adjust the height of the movable mounting position at right side against the fixed belt stopper at left side.
Adjust the horizontal level of the carriage base so that the difference between the right and left is less than 0.3 mm.
- Preparation : Press the Door SW to cancel the operation restriction.
Enter Manual elevating operation mode of the Test mode (Diag → Robotics → Individually).
Prepare the magazine. (Be sure not to load the upper four discs.)
- Adjustment point: Eccentric bushing

- * Confirm the height of the D guides in advance. Be sure to check the height of the interrupter UP when the adjustment is completed.

- (1) Move the carriage base to [99].
- (2) Rotate the loading motor manually and stop rotating it immediately after the D guides have come out from the carriage base. Do NOT move the chuck outward.
- (3) Load the magazine into magazine bay No. 2. Care must be taken that the magazine does not touch the D guides.
If it does, move back the D guides toward the carriage base.
- (4) Release the Door switch.
- (5) While observing through the hole at the top of the magazine, move the carriage base up or down manually so that the slot of disc rack L located to your left and D guide L align.
- (6) Confirm visually that the difference in height between the slot of the disc rack R on the right side and the D guide R is less than 0.3mm. If not, perform the following adjustment.

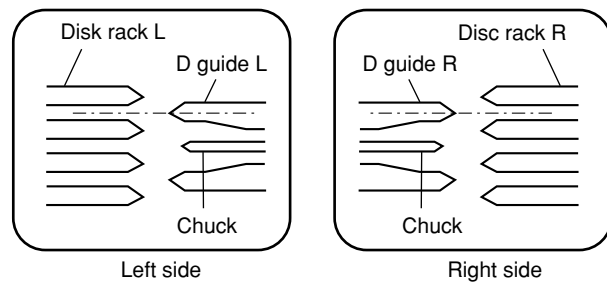


Fig. 2

Note: Do not use the position of the chuck, as it may not be accurate.

- (7) Loosen the hexagon coupling bolt for fixing, then temporarily tighten it. ㉔
- (8) If the right side is lower, turn the eccentric bushing counterclockwise as necessary, and if the right side is higher, turn it clockwise as necessary.
(clamping torque: 68.6 Ncm (7 kgcm)) ㉔, ㉕
- (9) Perform steps (4) to (6) for verification. If the difference still exceeds 0.3mm, repeat steps (7) to (8) and (4) to (6).
- (10) Lock the screws when the adjustments are completed. ㉕

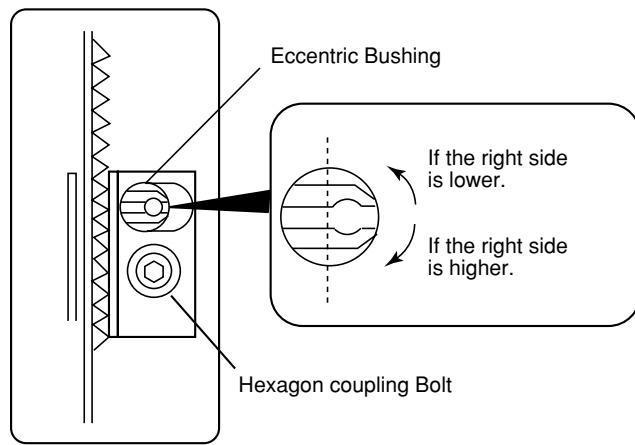


Fig.3 Right and left horizontal adjustment

Front-Rear Adjustment of the Carriage Base

- Purpose : To adjust the carriage base so that it becomes front-rear horizontal to the main unit.
- Method : Adjust by turning the front-rear adjustment screw on the carriage base.
- Contents : Adjust the horizontal of the carriage base so that the difference between the front and rear is less than 0.3 mm.
- Preparation : Press the Door SW to cancel the operation restriction. Open the rear door and press the Door SW to release the operation limit. Enter Manual elevating operation mode of the Test mode (Diag → Robotics → Individually). Prepare the two magazines.
- Adjustment point: Front-rear adjustment screw

* Confirm the height of the D guides in advance. Be sure to check the height of the interrupter UP when the adjustment is completed.

- (1) Move the carriage base to [99].
- (2) Rotate the loading motor manually and stop rotating it immediately after the D guides have come out from the carriage base. Do NOT move the chuck outward.
- (3) Load the magazine into magazine bay No. 2. Care must be taken that the magazine does not touch the D guides. If it does, move back the D guides toward the carriage base.①
- (4) Release the Door switch.
- (5) While observing through the hole at the top of the magazine, move the carriage base up or down manually so that the slot of disc rack L located to your left and D guide L align.
- (6) Remove the magazine, and rotate the loading motor manually so that the D guide moves to the rear.
Note: The alarm sound of the disc sensor can be stopped by pressing the FUNCTION button.
- (7) Set the unit to the state immediately after the D guides come out from the carriage base. Do NOT move the chuck outward.
- (8) Load the magazine into magazine bay No. 5, and check from the rear that the slot of the disc rack and the D guide align. Confirm visually the horizontal between front and rear from the left and right sides.

- (9) If there is a difference in height, adjust by turning the front-rear adjustment screw on the carriage base. ㊟
- (10) If the D guide at the rear side is higher, turn the adjustment screw counterclockwise. If the D guide at the rear side is lower, turn the adjustment screw clockwise.
- (11) After the adjustment is completed, repeat from Steps 5 to 10 for confirmation, then lock the screws. ㊟

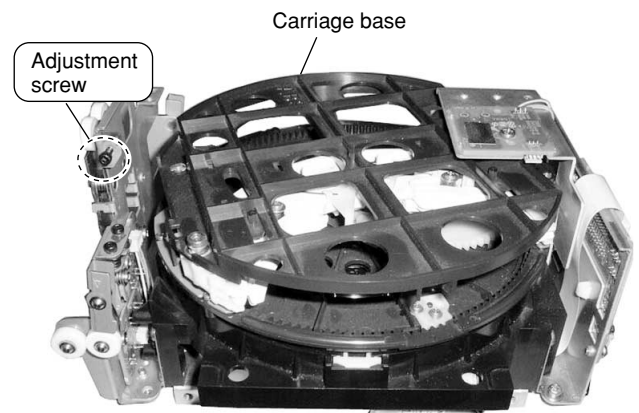


Fig. 4 Front-rear adjustment of the carriage base

Height Adjustment of the Interrupter UP

- Purpose : To align the stop position of carriage base elevation with the disc magazine.
- Method : Adjust by turning the interrupter UP adjustment screw.
- Contents : Adjust the height of the interrupter UP to align the height at which the carriage base stops with the magazine.
- Preparation : Enter Manual elevating operation mode of the Test mode (Diag → Robotics → Individually). Prepare the magazine. (Be sure not to load the upper four discs.)
- Adjustment point: Height adjustment screw
The LED for monitoring the interrupter output is located on the FCNB Unit (interrupter UP: green).
- * Confirm the height of the D guides in advance.

- (1) Move the carriage base to [99].
- (2) Manually rotate the loading motor to bring the D guides out to the front. (Set to a state just after the D guides have come out from the carriage base. Do not move the chuck outward.)
- (3) While observing the green LED, manually move the carriage base slightly up and stop it immediately when the green LED lights up.
If the green LED is already lit, first move the carriage base slightly down.
- (4) When the magazine is slowly inserted, it engages with the D guides just before it locks. While observing through the hole at the top of the magazine, confirm that the D guides are not moved by the magazine. If they move, perform the following adjustment. ①

- (5) If the D guides move, adjust the position of green LED lights up by the interrupter UP height adjustment screw. ②
- (6) Manually set the carriage base to the position where the magazine does not touch the D guides when it moves in and out in the above-mentioned way.
→ While moving the carriage base up or down little by little, find a position where the D guides do not move even when the magazine is moved in and out.
→ Find a position of the carriage base relative to the magazine. As this position is used as the reference for adjustment of the interrupter DN, do not move or even touch the carriage base after its position is determined.
- (7) Turn the interrupter UP height adjustment screw clockwise and stop it when the green LED lights. (If the LED was lit when starting the adjustment, first turn the screw counter-clockwise to go off the LED.) ③
- (8) Further turn the screw 180 degrees (170 to 190 degrees) clockwise then stop it.

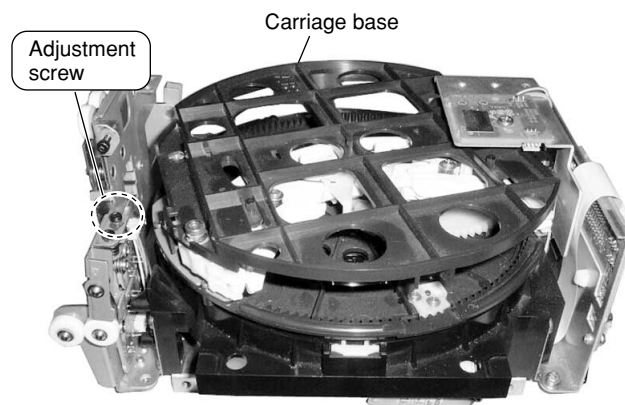
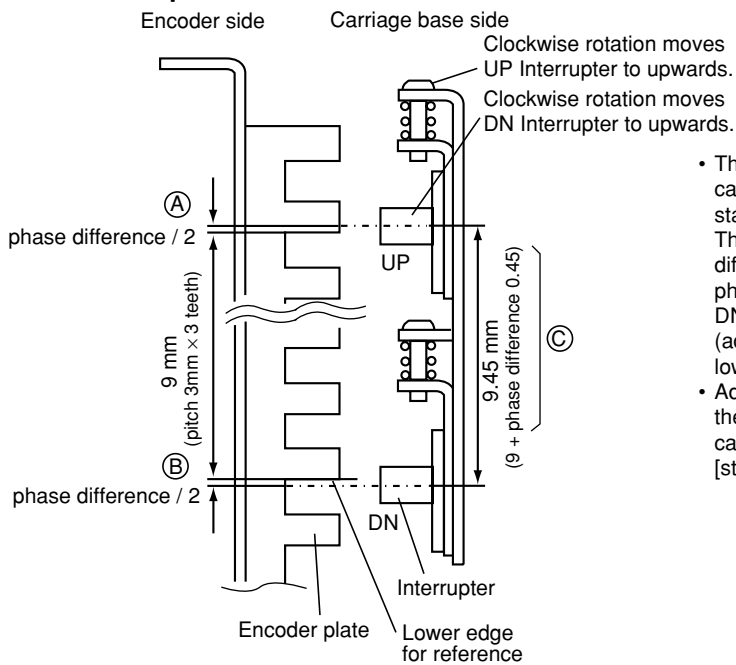
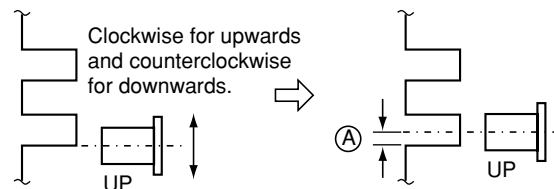


Fig. 5 Height adjustment of the interrupter UP

< Detailed explanation >



- The figure to the left shows the center of the stop position of the carriage base. The purpose of the adjustment is to obtain this status. The stop position requires $A > 0$ and $B > 0$. This means that the stop position range must be $\pm$ phase difference/2 and the stop-position range must be equal to the phase difference. Thus, as shown in the figure to the left, set DN (reference side) to phase difference/2 below and UP (adjusting side) to phase difference/2 above with respect to the lower edge of the encoder slit.
- Adjust A in the height adjustment. Align the target lower edge of the encoder slit with the position of UP (= the position of the carriage base) [step (7)], then move it up by the amount of A [step (8)].



* The interrupters light when the light is blocked.

Fig. 5 Adjustment model view

Phase Adjustment of the UP-DN Interrupters

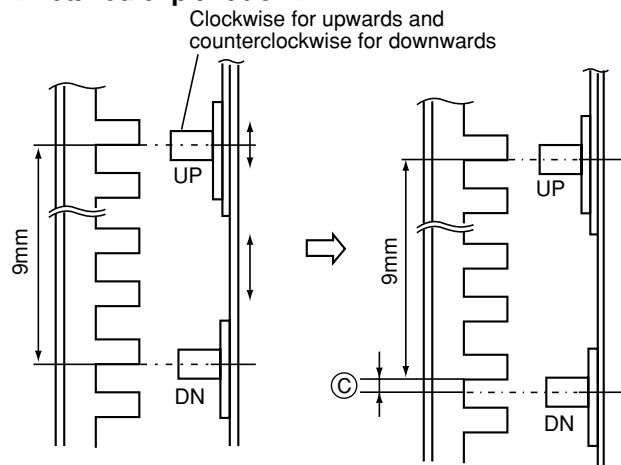
- Purpose : To adjust the stop position range of carriage base elevation to 0.45 mm.
- Method : Adjust by turning the Phase-adjustment screw on the carriage base.
- Contents : Set the interrupter UP 0.45mm higher than the interrupter DN. Adjust the phase difference (relative height) between UP and DN to 0.45 ± 0.05 mm.
- Preparation : Enter Manual elevating operation mode of the Test mode (Diag → Robotics → Individually).
- Adjustment point: Phase-adjustment screw
The LEDs for monitoring the interrupter outputs are located on the FCNB Unit (interrupter UP: green, interrupter DN: red).

- (1) Move the carriage base to [99] to permit easy access to the phase-adjustment screw.
- (2) While observing the green LED, slowly move the carriage base up by hand and stop it immediately when the green LED lights.

Important: Be sure to stop the carriage base in an upward movement.

- (3) Turn the phase-adjustment screw clockwise and stop it when the red LED lights. (If the LED is already lit when starting the adjustment, once turn the screw counterclockwise to turn the LED off.) ㊦
- (4) Verification: Move the carriage base down until the red LED goes off, then slowly move it up again to check that the two LEDs simultaneously light. If they do not light simultaneously, repeat the adjustment from step (2).
- (5) While observing the red LED (interrupter), slowly move the carriage base up or down by hand and stop it immediately when the red LED lights. Be sure to stop the carriage base in an upward movement.
- (6) In the state when the red LED lights, turn the phase-adjustment screw clockwise 360 degrees (350 to 370 degrees).
(Be sure to finish the adjustment by turning the phase-adjustment screw clockwise. For example, turn the screw counterclockwise by 390 degrees, then turn it clockwise by 30 degrees to finish the adjustment.)
- (7) Lock the screws when the adjustment is completed. ㊦

< Detailed explanation >



* The interrupters light when the light is blocked.

Adjust ㊦ (㊦ + ㊦) in the UP-DN phase adjustments.
After aligning the UP interrupter with the lower edge of the encoder slit (step 2), temporarily align the interrupter DN also with the lower edge (step 3).
After confirming that the DN and UP interrupters are in place (step 4), align the interrupter DN with the lower edge again (step 5) and move the interrupter DN downwards by the amount of ㊦ (step 6).

Fig. 7 Adjustment model view

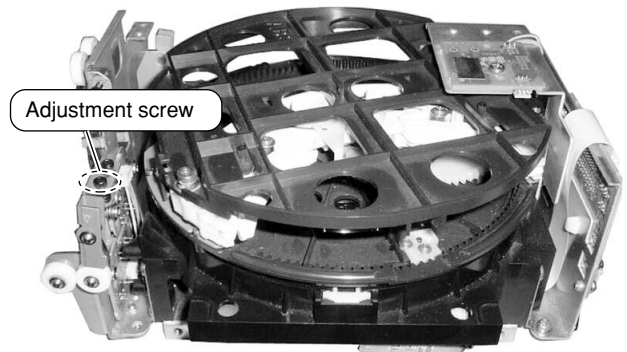
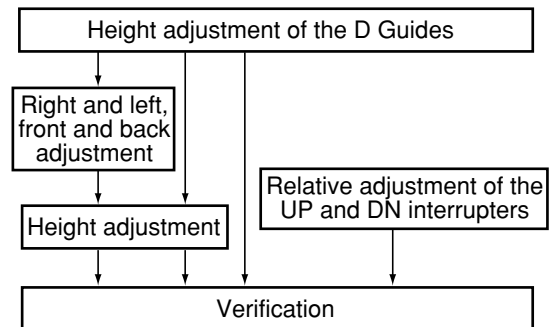


Fig. 8 Phase adjustment of the UP-DN interrupters

Verification of Operations After Adjustments



- Be sure to confirm the height of D guides before the right and left adjustment and front and back adjustment of the carriage base and the height adjustment of the interrupter UP.
- Be sure to check the height of the interrupter UP when the right and adjustment and front and back adjustment of the carriage base have been performed.
- Perform the relative adjustment of the UP and DN interrupters in conjunction with other adjustments as required.

Perform the verification of operations after the height adjustment of the D guides, right and left adjustment and front and back adjustment of the carriage base, height adjustment of the interrupter UP, or relative adjustment of UP-DN interrupters is completed.

- (1) Set the unit to Manual elevating operation mode of the Test mode (Diag → Robotics → Individually).
- (2) Move the carriage base to [99].
- (3) Set the upper magazine only. (Be sure not to set the upper four discs.)
- (4) Rotate the turntable in Manual loading operation mode of the Test mode (Diag → Robotics → Individually) to move the D guides out towards the front and rotate the table in the reverse direction to return to a position where the magazine does not touch the D guides.
→ Set to the state just before the turntable starts rotating.

Caution: A manual loading operation may not be allowed, depending on the position of the carriage base or turntable. Be sure to just lightly touch (or momentarily push) the switch when operating it.

- (5) Observe through the hole at the top of the magazine to check that there is no misalignment in gear teeth or in height between the slot of the disc rack R on the right side and the D guide R or between the slot of the disc rack L on the left side and the D guide L.

SENSITIVITY ADJUSTMENT OF THE CARRIAGE-BASE DISC SENSOR

- Purpose : To adjust the sensitivity of the disc sensor of the carriage base.
- Method : Adjust VR851 on the DSEB Unit
- Contents : Adjust the phototransistor output of the light-receiving block.
- Preparation : Prepare the adjustment disc.
- Adjustment point: Semifixed volume control (VR851, DSEB Unit)
Use the asterisk (*) mark at the lower center of the LCD for monitoring the sensor output. (An asterisk appears when a disc is in.)

• How to enter the adjustment mode:

- (1) Set the door key to **UNLOCK** position.
- (2) Press the **FUNCTION** and **↑→** keys simultaneously for four seconds.
- (3) "Entering to the Tset Mode!!OK?" is displayed, then press **ENT** key.
- (4) Select "Diag" and press **ENT** key.
- (5) Select "Robotics" and press **ENT** key.
- (6) Select "Collectively" and press **ENT** key.
- (7) Select "Step-by-step" and press **ENT** key.
- (8) "Source Address ? #001(M1-01)" is displayed.
- (9) Specify the target address with **←↓** and **↑→** keys and press **ENT** key.
- (10) Pull the disc in the carriage block when pressing the **ENT** key in the display of "Disc Pick-up fwd #xxx".
- (11) "Dest. Address ? Bay #01" is displayed, then press **ESC** key.
- (12) Return the disc to the magazine when pressing the **ESC** key in the display of "Disc Release rev#xxx".

• Adjustment procedure:

- (1) Set the adjustment disc to the magazine and install the magazine in the location where the work is easy to do.
- (2) Set the test mode to Step operation mode.
- (3) Move the carriage base to the address of disc position.
- (4) Pull the adjustment disc in the carriage base. (h)
- (5) Check the display, and turn VR851 on the DSEB unit clockwise a little when the "disc in" indication is displayed (* is displayed in the lower center of LCD), and turn it to the counterclockwise a little when "no disc" indication is displayed.
- (6) Return the adjustment disc to the magazine.
- (7) Repeat the steps 4 to 6 until the display of the disc existence changes, and adjust it to be within 10 degrees from the changing point.

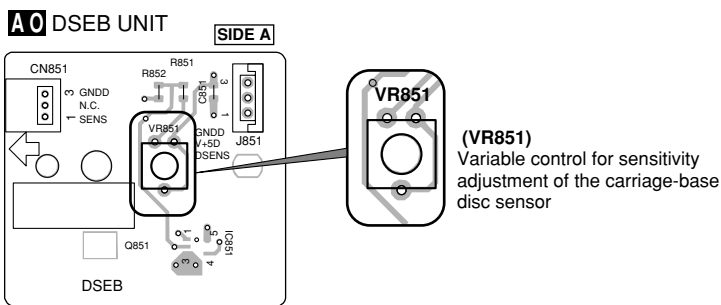


Fig. 9 Adjustment point

SENSITIVITY ADJUSTMENT OF THE MAGAZINE DISC OUT-OF-POSITION SENSOR

- Purpose : To adjust the sensitivity of the magazine disc out-of-position sensor
- Method : Adjust the LED output of the light-emitting block by turning VR852 (FRONT) and VR851 (REAR) on the SIFB2 Unit
- Contents : Adjust the voltage by connecting a voltage measuring instrument (voltmeter, multimeter, etc.) to TP851 (FRONT) and TP852 (REAR).

• Preparation:

- (1) Prepare the adjustment disc and adjustment filter.
- (2) Remove all magazines (including hyper magazine) and drives.
- (3) Move the carriage base to the initial position (address 3).
- (4) Connect a voltmeter (or multimeter, etc.) between TP851 (FRONT) or TP852 (REAR) and TP853 (GNDD) on the SIFB2 Unit.

• Adjustment point:

Semifixed volume control (VR852: FRONT, VR851: REAR)
Connect a voltmeter (or multimeter, etc.) to TP851 (FRONT) and TP852 (REAR).

• How to enter the adjustment mode:

- (1) Set the door key to **UNLOCK** position.
- (2) Press the **FUNCTION** and **↑→** keys simultaneously for four seconds.
- (3) "Entering to the Tset Mode!!OK?" is displayed, then press **ENT** key.
- (4) Select "Sensor" and press **ENT** key.
- (5) Select "Front sensor" or "Rear sensor" and press **ENT** key.
- (6) "Front (Rear) sensor working" is displayed, then the unit enters the disc sensor adjustment mode.

• Adjustment procedure:

- (1) Set the test mode to disc sensor adjustment mode.
- (2) Set the adjustment disc and adjustment filter so that it blocks the optical axis. (Insert the adjustment disc and filter to slot 50 of the magazine and set to magazine bay #3 at the front side and set to magazine bay #7 at the rear side.) **h** **i**
- (3) Adjust VR852 (FRONT) and VR851 (REAR) on the SIFB2 unit so that the voltage of TP851 (FRONT) and TP852 (REAR) become the adjustment value which is mentioned on the case of the adjustment disc (tolerance: $\pm 0.2V$).

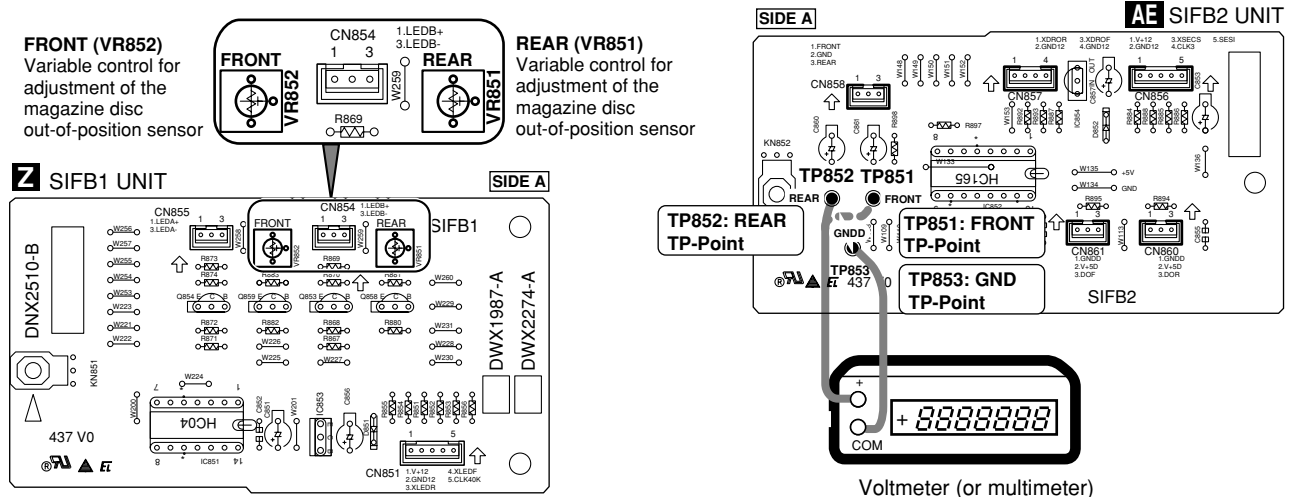


Fig. 10 Adjustment points/connections

ELEVATING SPEED ADJUSTMENT

- Purpose : To adjust the elevating speed of the carriage base.
- Method : Adjust VR601 on the VMDB Unit
- Contents : Adjust the pulse width of TP601 (MMOUT).
- Preparation : Connect an oscilloscope (10:1 probe) to TP601 (MMOUT) and TP602 (GND) on the VMDB Unit.

• How to enter the adjustment mode:

- (1) Set the door key to **UNLOCK** position.
- (2) Press the **FUNCTION** and **↑→** keys simultaneously for four seconds.
- (3) "Entering to Tset Mode!!OK?" is displayed, then press **ENT** key.
- (4) Select "Diag" and press **ENT** key.
- (5) Select "Robotics" and press **ENT** key.
- (6) Select "Individually" and press **ENT** key.
- (7) Select "Elevation" and press **ENT** key.
- (8) Select "Manual" and press **ENT** key.
- (9) Carriage base moves to up and down with **↕** and **↑→** keys and generates a pulse from the rotary encoder.

• Adjustment procedure:

- (1) Set VR601 on the VMDB Unit to the mechanical center.
- (2) Turn the elevating motor by using the elevating manual operation and generate a pulse from the rotary encoder.
- (3) Adjust VR601 so that the pulse width of TP601 (MMOUT) to 13 ± 0.3 msec.

Caution: Be careful because the carriage base is moved at high speed in some modes.

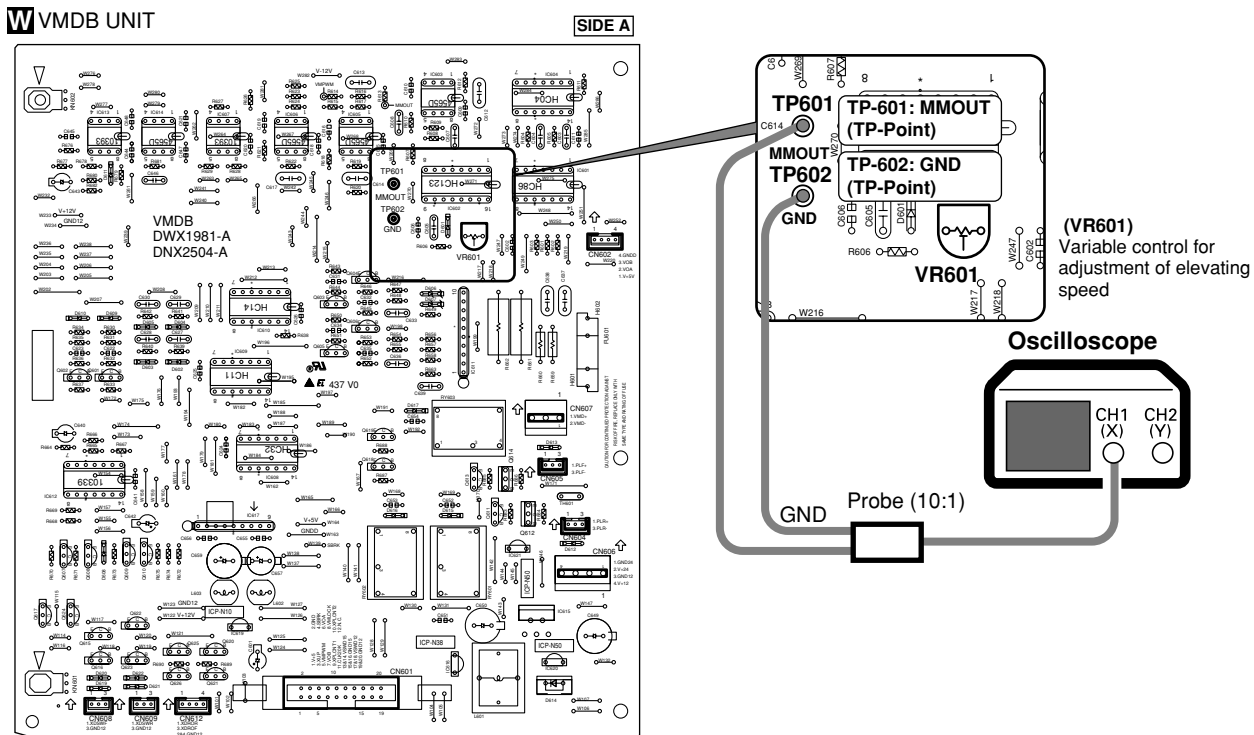


Fig. 11 Adjustment point/connections

LCD POWER SUPPLY VOLTAGE ADJUSTMENT

- Purpose : To adjust the power supply voltage of the LCD module.
- Method : Adjust VR701 on the FRPB Unit
- Contents : Connect a voltmeter (or multimeter, etc.) between CN702-pin 2 (VEE) and pin 1 (VSS), and adjust the voltage.

• Preparation:

- (1) Remove the FRPB Unit from the front panel. (LCD module and key SW unit are unnecessary.)
- (2) Connect the power supply of 12V $\pm$ 5% between CN701-pin 1 (V12) and pin 2 (GND12), and connect the voltmeter between CN702-pin 2 (VEE) and pin 1 (VSS).

• Adjustment procedure:

Semifixed volume control (VR701)

Connect the voltmeter (or multimeter, etc.) between CN702-pin 2 (VEE) and pin 1 (VSS).

- (1) Set VR701 on the FRPB unit to the mechanical center.
- (2) Apply a 12V power supply.
- (3) Adjust VR701 so that the voltage of CN702-pin 2 (VEE) becomes 5 $\pm$ 0.05V.

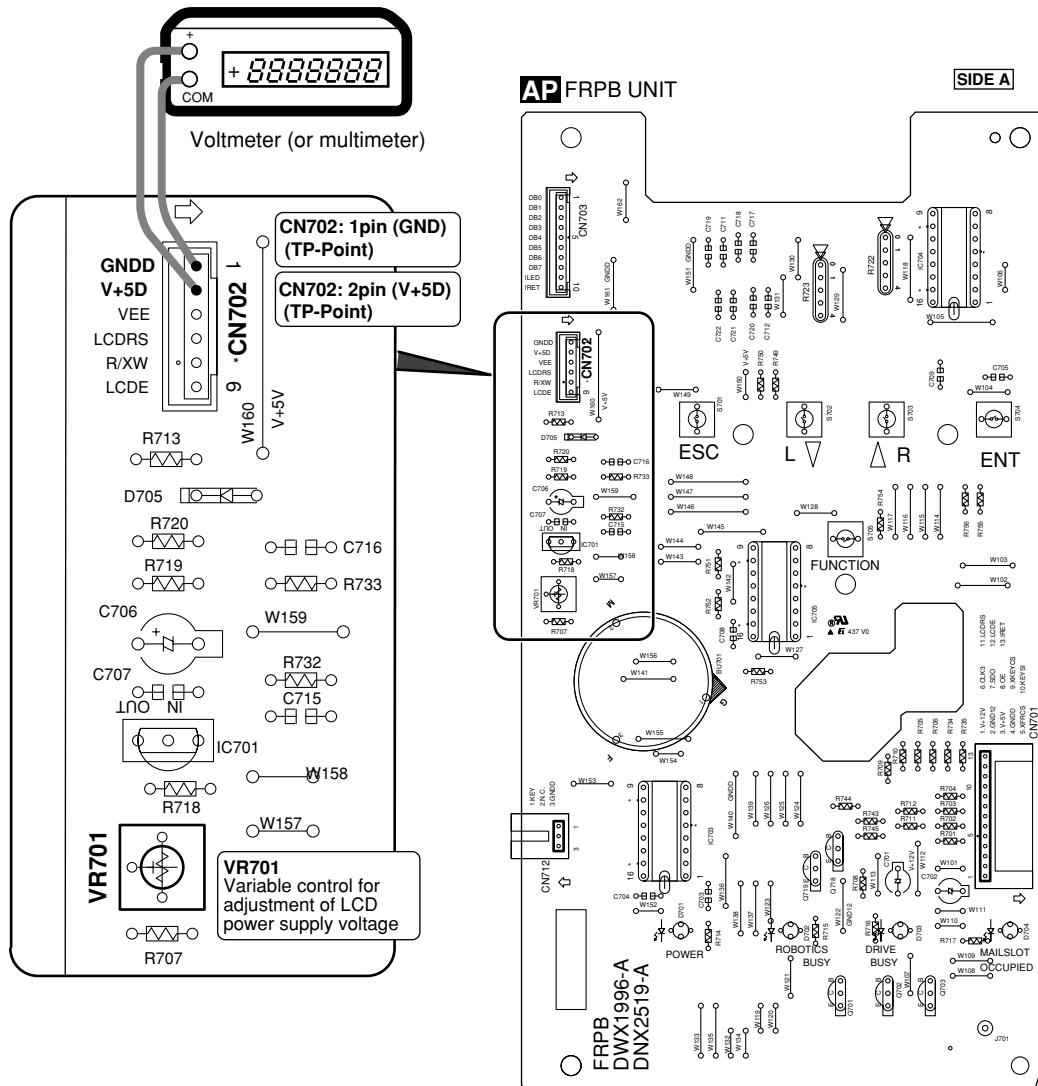


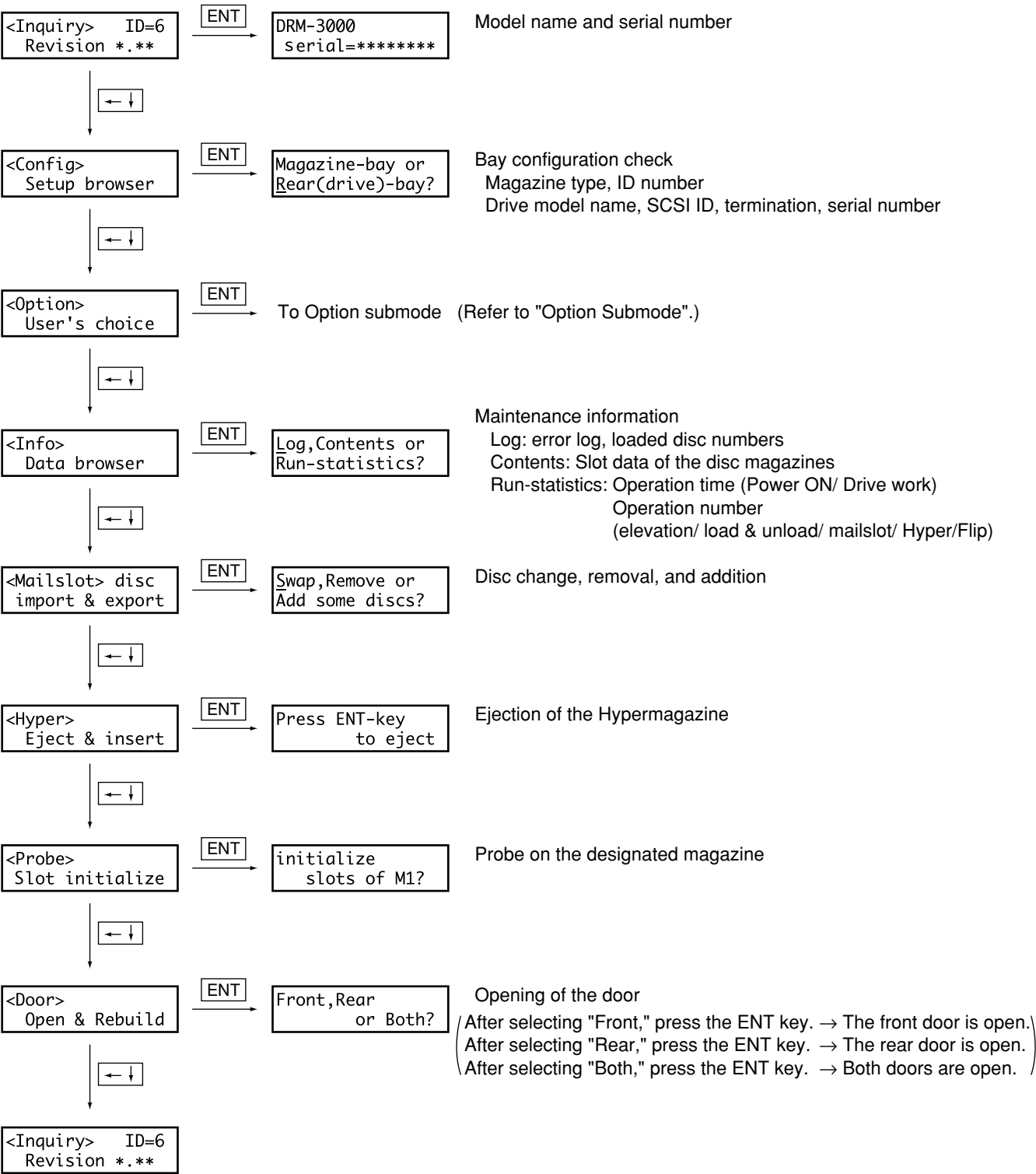
Fig. 12 Adjustment points/connections

GENERAL INFORMATION

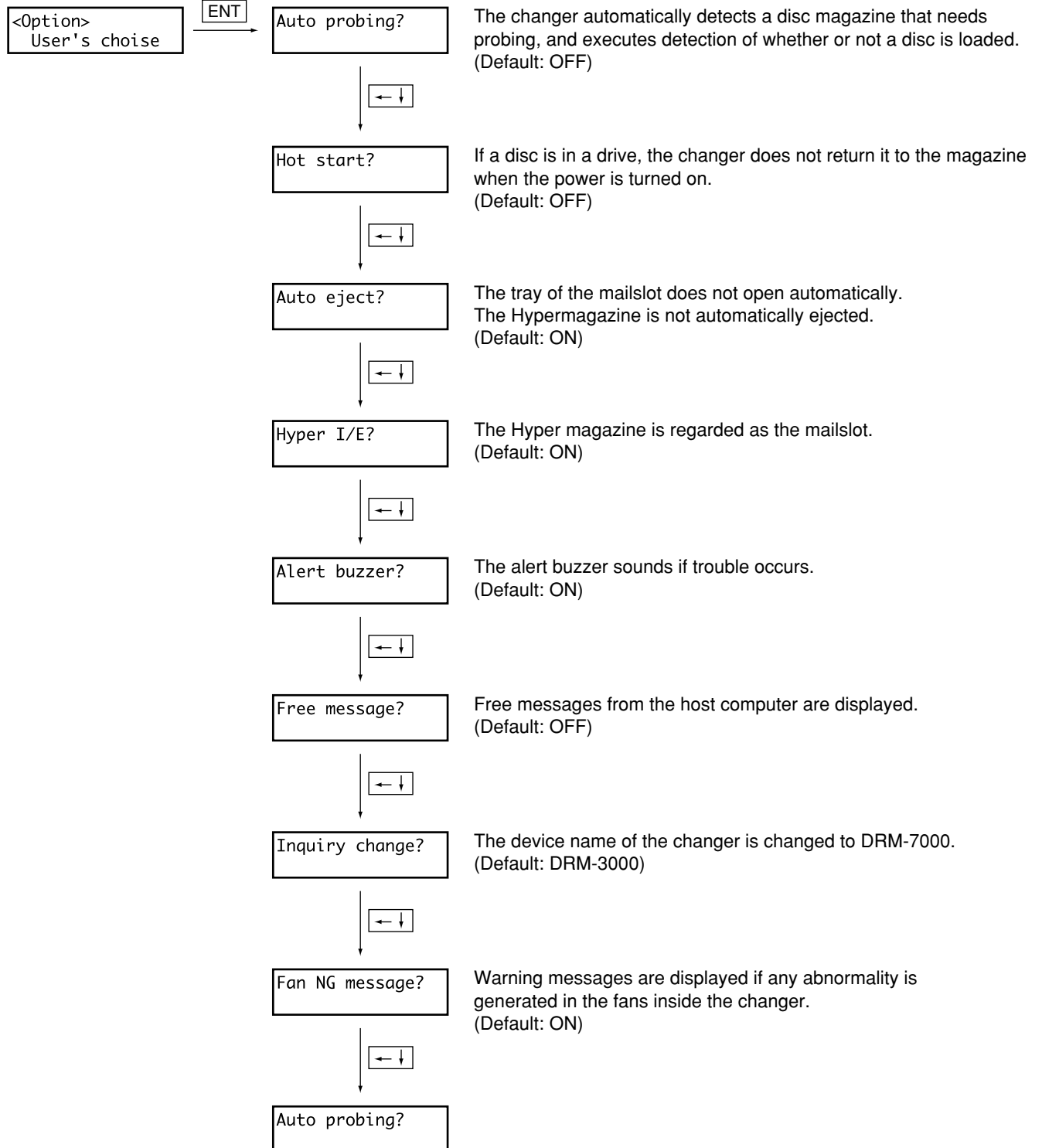
DIAGNOSIS

SYSTEM ADMINISTRATOR MODE

Turn the door key to UNLOCK, then press the **FUNCTION** key.



Option Submode



TEST MODE

Entering Test Mode

- (1) After the power is turned on and the initialization of the mechanism ("Initializing" is displayed) is completed, the following indication is displayed.

Robotics	ready
Drive1	no disc

The unit is in User mode.

- (2) Set the door key to UNLOCK and press the **FUNCTION** key.
The following indication is displayed:

<Inquiry>	ID=6
Revision	***

The unit enters System Administrator mode.

- (3) Press the **FUNCTION** and **↔** keys simultaneously for 4 seconds.
The following indication is displayed:

Entering to the	
Test mode!! OK?	

Asking if you wish to enter Test mode.

- (4) Press the **ENT** key. The following indication is displayed:

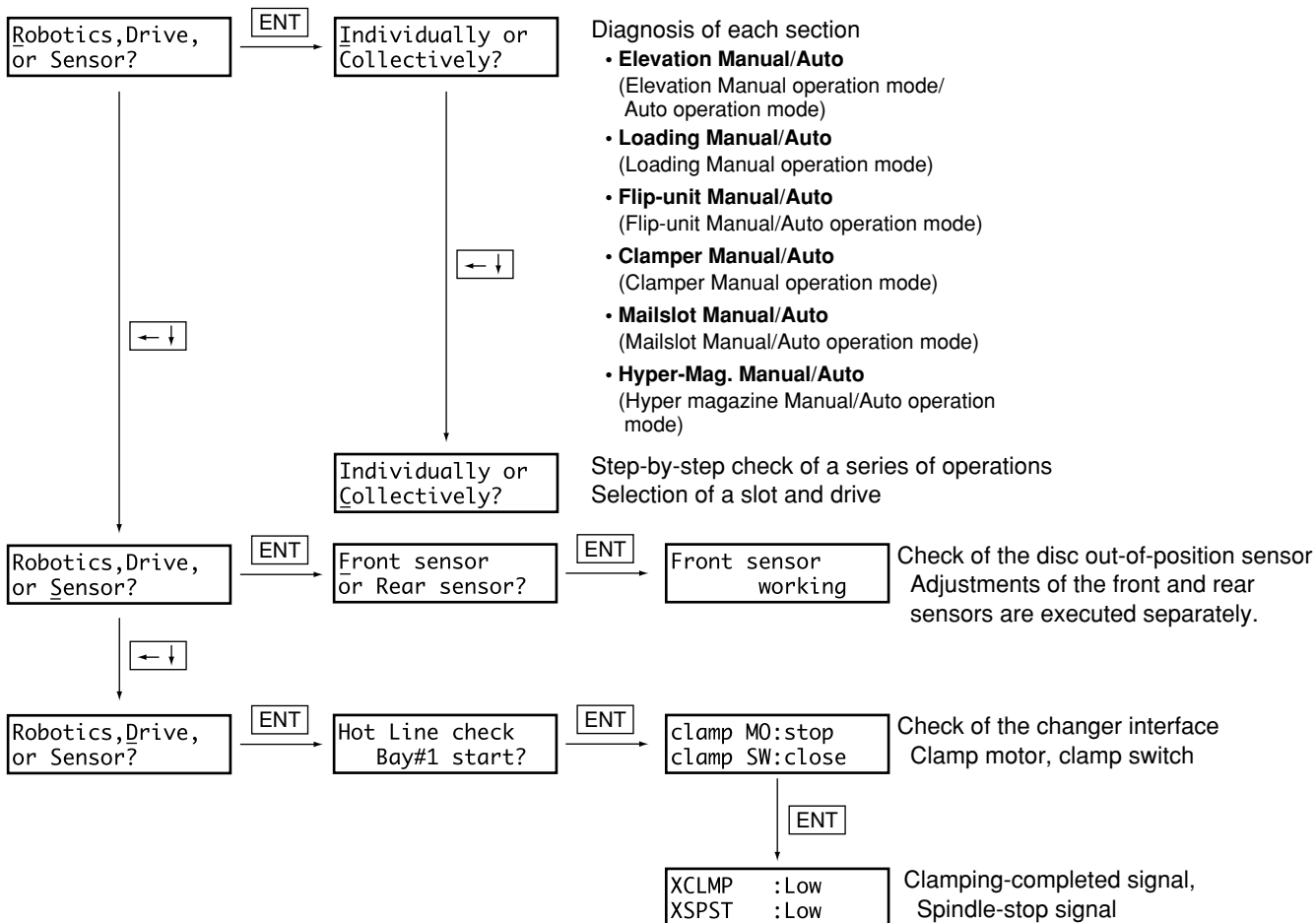
Select the mode.	
Diag,Demo,Info	

The unit enters Test mode.
The cursor is blinking on D (Diag).

- (5) Move the cursor to the mode of your choice by pressing the **↔** or **↕** key, then press the **ENT** key.

Diag mode

- Select "Diag," then press the **ENT** key.



Specifications of Demo mode

- (1) Move the cursor to Demo by pressing the  key, then press the  key to display the Demo Mode Select screen.
Select Demo 1, 2 or 3 mode by pressing the  or  key.

Demo 1

All Drive Demo?
need dsc hyp1-8

In this mode, a disc is carried to the drive unit, the drive unit is started, then stops. Discs must be set in Hyper magazines #1 to #8.

Demo 2

DiscChange Demo?
need 2 discs

In this mode, two discs are carried one after another to one drive unit. Two discs are required.

Demo 3

All Slot Aging?
need disc hyp1-4

In this mode, discs are carried to all magazines installed, one after another. Discs must be set in Hyper magazines #1 to #4.

- (2) Press the  key to enter the demo mode you have selected.

Demo 1

Preparation :

Set 8 discs each into Hyper magazines #1-8 (from the lowest to the 8th slots).

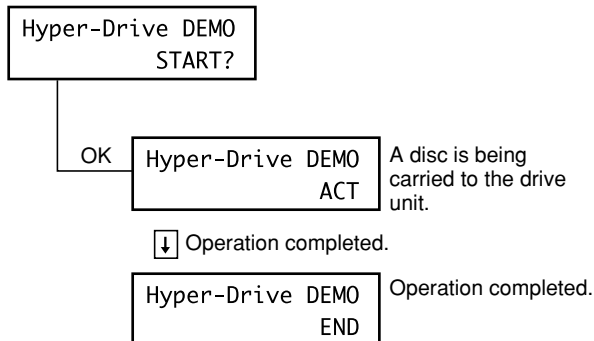
Operational steps :

- (1) The disc in Hyper magazine #1 is carried and inserted into the rear Bay #1 drive unit.
- (2) The disc in Hyper magazine #2 is carried and inserted into the rear BAY #2 drive unit.

...

- (8) The disc in Hyper magazine #8 is carried and inserted into the rear Bay #8 drive unit.
- (9) All the transferred discs start rotating. Demo 1 completed.

Indications :



Note: If a drive unit is not installed at the rear Bay, the disc is carried to the location where the specified drive unit should be installed then returned to the original Hyper magazine.

Demo 2

Preparation :

Set two discs into Disc slots #001 and #350.

Operational steps :

- (1) The disc in slot #001 is carried to the rear Bay #4 drive unit.
- (2) The disc in the rear Bay #4 drive unit is returned to slot #001.
- (3) The disc in slot #350 is carried to the rear Bay #4 drive unit.
- (4) The disc in the rear Bay #4 drive unit is returned to slot #350.

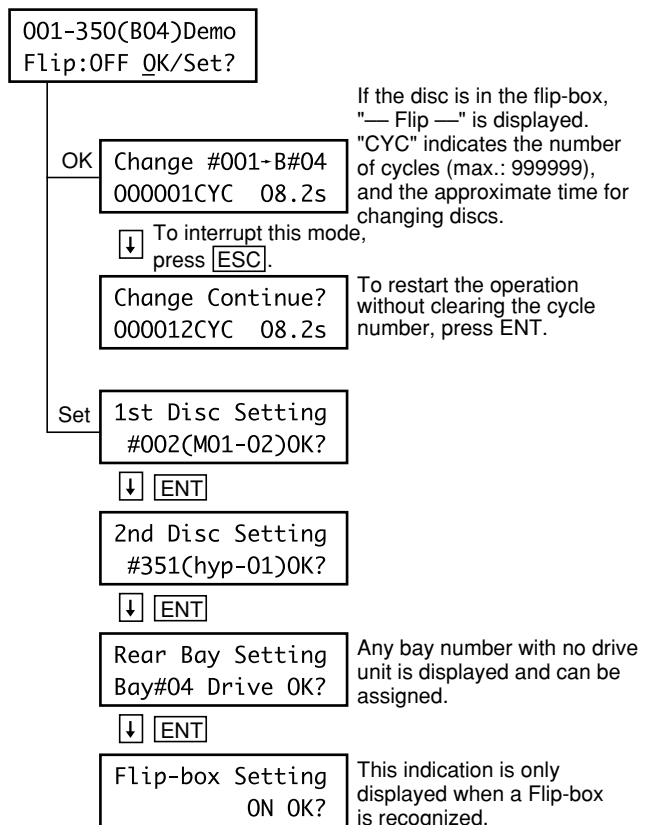
Note: The above steps (2) to (4) constitute one cycle.

Modifiable setting items :

- Disc slot number for the first disc (Default: #001)
- Disc slot number for the second disc (Default: #350)
- Bay number of the drive unit (Default: Bay #4)

Note: The modified settings will be retained until the power is turned off.

Indications



Press  key to display the Flip-Box Setting OK/Set screen.

Note 1: In the following cases, the setting will not be accepted:

- When a specified magazine is not installed. (Even the default setting will not be accepted if the magazine is not installed.)
- When a disc has been set in the specified drive unit.

Note 2: The approximate time for changing discs is calculated according to the time from just after the spinning-stop process is completed until just before the spinning-start process is started. (Although the drive is not controlled in this mode, the time just before a drive-control command is processed is included.)

The time is rounded off to two decimal places.

Note 3: If the specified disc is not set in the specified magazine, error EF8 is generated.

Demo 3

Preparation :

- Set four discs each into Hyper magazine #1 to #4 (from the lowest to the fourth slots).
- Discs should not be inserted into other Hyper magazines.

Operational steps :

- (1) The discs in Hyper magazine #1 to #4 are carried to Minimum magazine #1 to #4.
- (2) The disc in Minimum magazine #3 (the second disc from the top) is carried to the Hyper magazine #5.
- (3) The disc in Minimum magazine #1 (the lowest disc) is carried to Hyper magazine #3.
- (4) The disc in Minimum magazine #4 (the upper disc) is carried to Hyper magazine #6.
- (5) The disc in Minimum magazine #2 (the third disc from the top) is carried to Hyper magazine #4.

Note: Reverse steps (2) through (5) above, and when all discs return to Minimum magazine #1 to #4, one round is completed. Repeat this for the 2nd round.

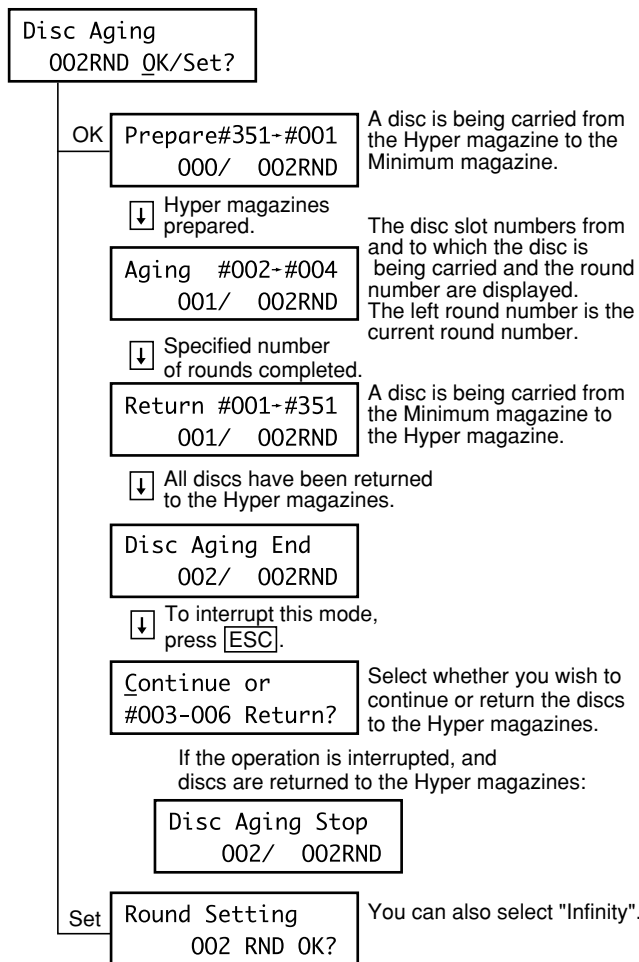
- (6) The discs in Minimum magazine #1 to #4 are carried to Hyper magazine #1 to #4.

Modifiable settings :

- Possible number of rounds: 1 to 999 (default: 2 rounds). Infinity can be also assigned.

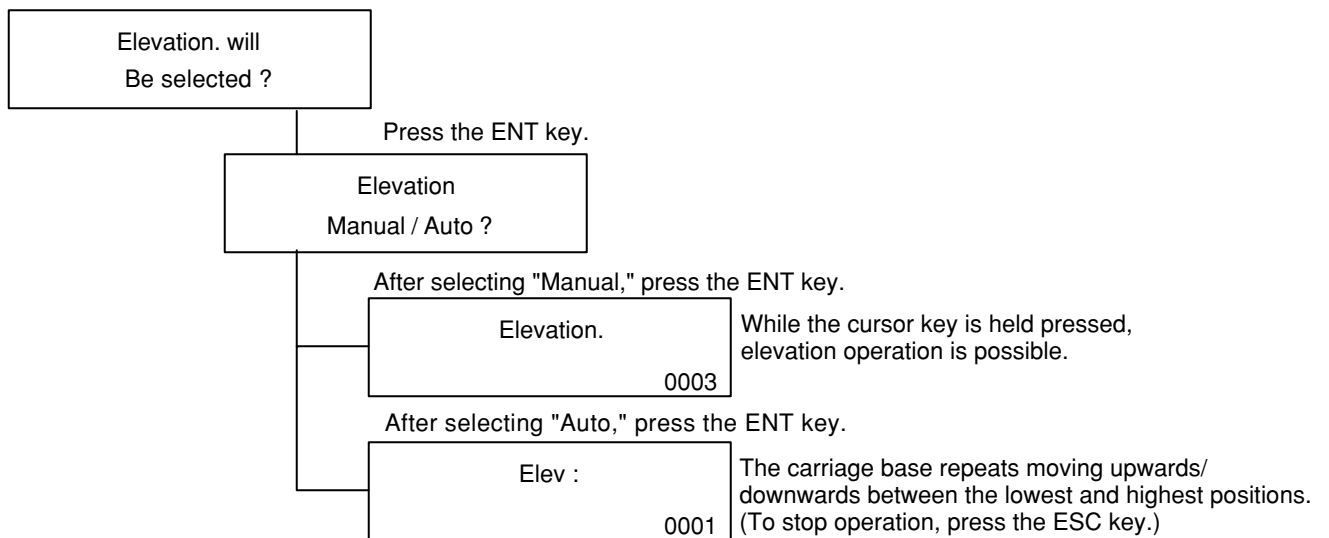
Note: The modified setting is retained until the power is turned off.

Indications :

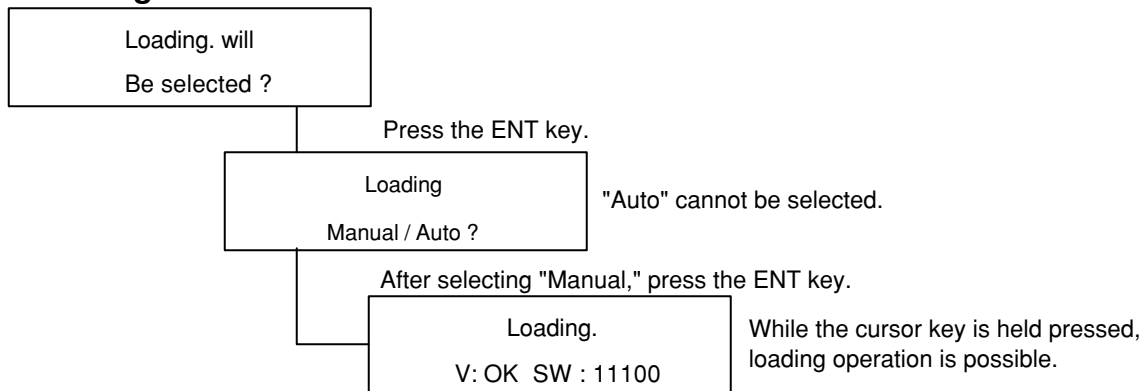


Note: "OK" is not accepted if the Hyper magazines are not inserted.

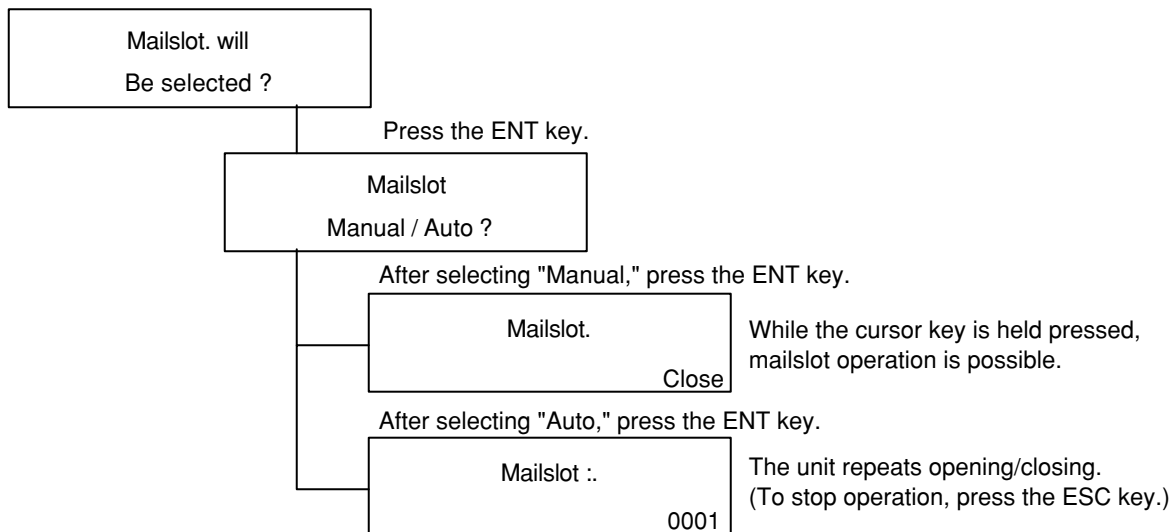
Elevation mode



Loading mode



Mailslot mode



TROUBLESHOOTING

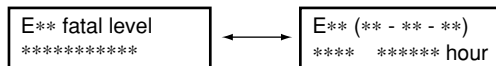
1. Basic Concepts

A condition in which normal changer operation cannot be continued is defined as "error status." When SCSI commands are used for operations, a check condition is returned to the host computer if an illegal command is sent. However, if normal operation can be executed by sending a legal command, this is not "error status."

An error with which operation of the disc-carriage mechanism cannot be continued is called a "fatal error." When a fatal error occurs, the error status cannot be released even if you turn the power off and on again. This is intended to eliminate secondary damage to the disc or the mechanism caused by starting initialization without removing the cause of the error. Be sure to open the door and check the internal condition of the changer to find the cause of the error, and take appropriate action. Initialization will start when the door is closed.

2. Indication and Buzzer upon Error Generation

If an error is generated, the buzzer sounds in synchronization with flashing of the backlight of the display window. In the display window, the "Error code and its explanation" and "Detailed information" are alternately displayed in an interval of 2 seconds. The buzzer stops sounding when the ESC key is pressed, but no subsequent operation can be performed without first operating the Lock Release key. This means that the operation to release the error can be performed only by the system administrator who manages the key or by service personnel.



• Detailed information on errors

- (1) Error code (in hexadecimal notation)
- (2) Table number (in hexadecimal notation)
- (3) Sequence step (in hexadecimal notation)
From the data (2) and (3), a mechanical sequence when an error was generated can be assumed.
- (4) Address where the error was generated (in hexadecimal notation)
An error generated while a disc is moved between magazines can be also specified (indicated with the physical address).
- (5) Elapsed time when the error was generated (in decimal notation)
A total of hours from the time when the system was turned on until the error was generated is displayed in hours and minutes. (In the LCD, the indication is in hours.)

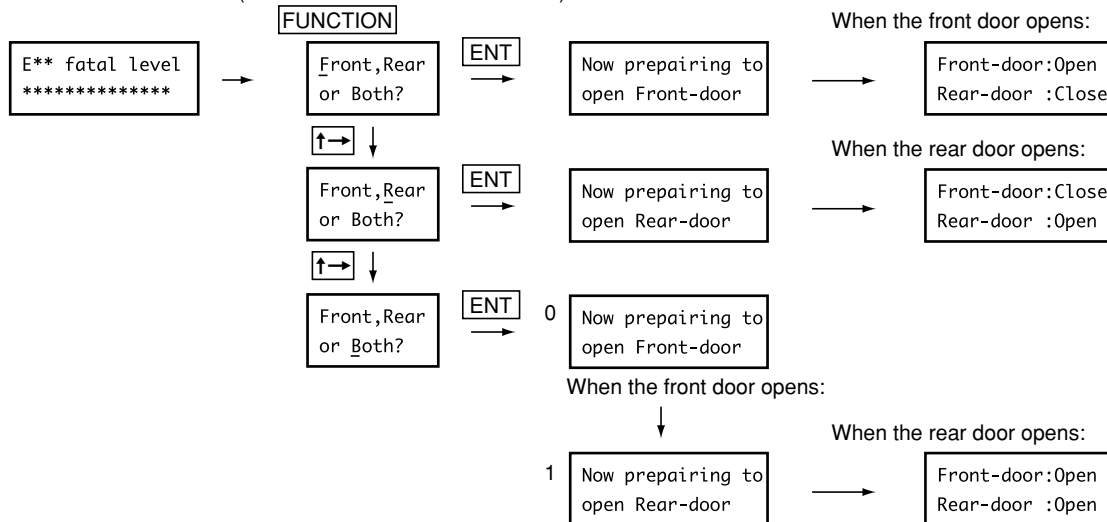
- The Table Number may become "00 " if an error is generated in DEMO mode.
- Even if the same error was generated continuously, all errors are recorded in the error log.

3. Operation Guidance upon Fatal Error Generation

As the door needs to be opened, one-touch shift to Door submode of System-administrator mode is enabled.

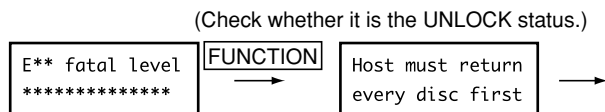
When no disc remains in the drive

(Check if it is the UNLOCK status.)



When a disc remains in the drive

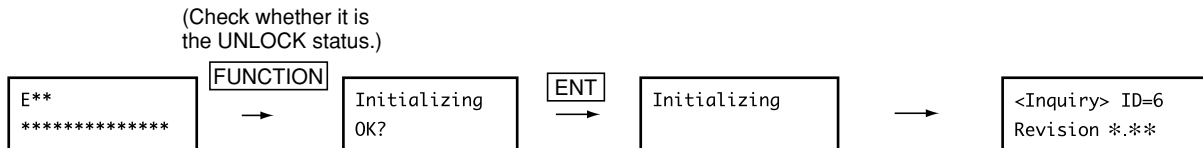
When a disc is used in the drive, the drive can be used even if an error occurs in the disc carriage mechanism. However, the door cannot be opened without stopping the drive. The system administrator should determine which takes priority, error canceling or continued use of the drive.



- If the host computer is connected, issue a "Rezero Unit" command. The drive will stop, and the unit will shift to Door submode. The disc will not be returned.
- If the host computer is not connected, turn off the power, then turn it on again.

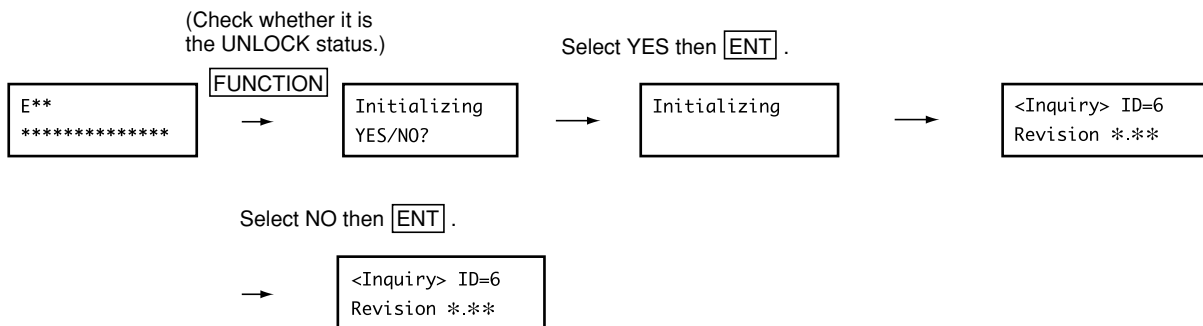
4. Quitting from Nonfatal Error Status (Mainly Errors with the Drive)

When an error occurs during mechanism initialization:



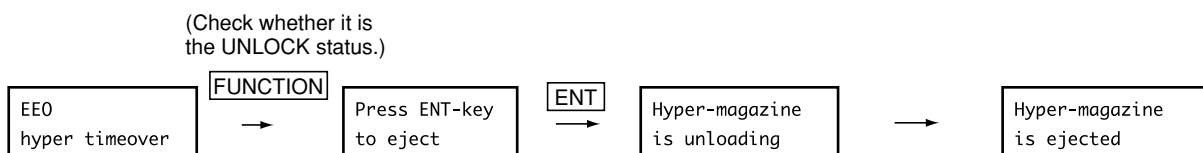
- If the indication returns from "Initializing" to an error indication again, it is necessary to manually open the door and remove the drive that caused the trouble. Following "7.1.8 DISASSEMBLY", open the rear door, disconnect the drive mounted on the drive bay (Bay 1 to Bay 8) having the corresponding number to the suffix (0 to 7) of the error code, then remove it. When you close the door, initializing of the mechanism begins.
- Sufficient care must be taken when checking the drive, since disconnecting/reconnecting the changer interface is equivalent to disconnecting/reconnecting the entire drive unit.
- If a disc remains in the removed drive, manually take it out. NEVER return the drive with a disc remaining inside to the changer. As the disc is not detected, and this may cause a secondary problem.

When an error occurs in a mode other than mechanism initialization:



- The requirements and operation procedure when the indication returns from "Initializing" to the previous error indication are the same as those "when an error occurs during mechanism initialization," mentioned above.
- When you specify "Initializing No.," Inquiry submode is selected. Change to Door submode to open the door, and remove the defective drive.

Hyper-magazine timeover



- If the memory of a hyper magazine cannot not be read, a warning message is displayed. Error EE0 is generated by a timeout in an inserting/ejecting operation, which has no relationship to memory. In either cases, normal condition may be restored by ejecting the hyper magazine and then reinserting it.

5. Preparatory Operations after Opening the Door, and Related Cautions

When the door opens, push the FUNCTION key to switch to System Administrator mode and read out and make a note of various kinds of information upon error generation in Config submode and Info submode. It will be useful for future error analysis and management.

- Mount position of magazine (bay number), magazine ID, and magazine type : Read out in Config submode.
- Mount position of drive (bay number), device ID, SCSI ID, Term and drive type : Read out in Config submode.
- Error log (error code, detailed information) : Read out using "Log/Error-log" in Info submode.
- Running time, the number of times of operation : Read out using "Run-statistics" in Info submode.
- Whether the machine recognizes whether there is a disc in the changer : Read out using "Contents" in Info submode.

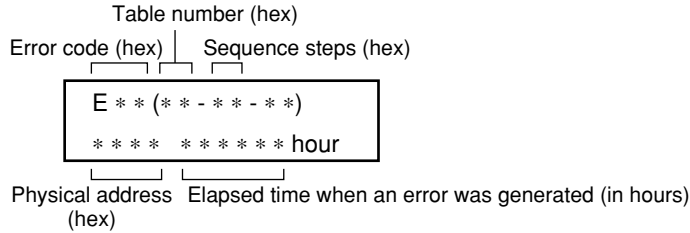
Error log display

To see the "Error code and its explanation" of an error, select the desired error from the error log list, and press the ENT key.

If the ENT key is pressed again, "Detailed information" is displayed. To return to the previous display, press the ESC key.

"Error log list" ↔ "Error code and its explanation" ↔ "Detailed information"

Detailed information display



If a magazine or a drive obstructs the view of the disc carriage mechanism when the door is open, pull out the magazine or the drive, as required. However, to recover the unit surely and quickly after error correction, follow the notes shown below:

- The operation must be done with the power on, as connecting and disconnecting of devices are not recognized when the power is off.
- Make a note of the bay and magazine numbers when you pull out the magazine, and return the magazine to the original position when reconnecting it after error management.
- If a disc remains in the disconnected drive, be sure to take out the disc. If the drive is reconnected to the changer with a disc remaining, the disc is not detected, and this may cause a problem.
- Mechanism Initialization may begin if the door is closed. Be careful not to inadvertently close the door during operations. Blocking the hole to disable the door switch may be effective.
- You can check the operation while observing the internal mechanism with the door open by pressing the door switch. In this case, be careful not to insert anything such as your hands inside, because the carriage base travels at high speed. And do NOT connect/disconnect the magazines and drives in this condition. As such a situation is impossible under normal conditions, doing so may generate inconsistency and cause a secondary problem.
- Do NOT eject the disc from a magazine. Doing so may cost you unnecessary probing operations after error management.

Caution: As the carriage base operates at a high speed, do NOT insert anything, such as your hands, inside.

6. Check Items and Management Procedure for Each Error Code

Fatal errors (mainly errors with the mechanism)

Confirmation of the causes and management procedure

Disc-protruding errors

Error No.	LCD Display	Most Likely Causes	Check Items	Management Procedure
E83	disc set NG	Disc protruding	The disc-protruding sensor becomes active when the door is opened, and the buzzer keeps sounding while trouble persists. Pull out the connected magazines one by one until the buzzer stops. (The hyper magazine is ejected in Hyper submode.)	If the buzzer stops sounding when a magazine is ejected, that magazine is the cause of trouble. Check whether the disc is tilted or not. The error will be canceled if the buzzer does not sound after inserting the disc again properly and mounting the magazine again.
		Chuck mechanism protruding	If the buzzer keeps sounding even after you remove all the magazines, check whether the carriage base block is in proper condition.	If the chuck or D-guide of the carriage base block is protruding, rotate the pulley on the rear side with your fingers (take care that the belt does not come off) so that the chuck or D-guide returns to its normal position. The error will be canceled if the buzzer turns off.
		Defective sensor	If the buzzer keeps sounding even after the carriage base block returns to the normal position, check that the light sensor is not blocked and nothing is stuck to it.	If you find nothing blocking or stuck to the light sensor block, close the door and try initialization. If the buzzer does not stop, readjustment of the sensor sensitivity is needed.

Errors in the elevating system

After an error is generated in the elevating system, manual operation (Diag-Robotics-Individually-Elevation-Manual in Test mode) is also forbidden, because there is no guarantee that the address will be recognized normally. However, by setting to this mode, you can monitor the change in address using the display window. When an error is generated, set the unit to this Test mode first.

Error No.	LCD Display	Most Likely Causes	Check Items	Management Procedure
E87	elev. sensor	Elevating address sensor trouble	Remove the side panel (right side), and check the lighting state of the green and red LEDs on the FNCB unit or DCMB1 unit.	The carriage base moves up or down as you rotate the pulley or belt of the VD motor. The LEDs show the VUPS and VDNS logic. If they turn ON/OFF normally, the MMCB unit is defective. Check whether pins 84 and 86 of IC101 are stable.
E88	elev. motor lock	Elevating motor locked	Pull out the magazines, confirm the position of the carriage base, and check that it corresponds to the address recognized by the changer (read out in Test mode). If the position corresponds to the address properly, close the door and try initialization.	If the machine does not work, and E88 is generated again, remove the side panel (right side), and check that CN105 of the MMCB unit is not disconnected. VMLOCK at pin 8 of CN105 is Low in normal condition. If VMLOCK remains High when the VD motor is not driven, there is a wire disconnected.
		Elevating address sensor or rotary encoder trouble	If the recognized address does not correspond to the actual position of the carriage base, and the carriage base is located in the highest or lowest position, there may be sensor trouble.	Remove the side panel (right side), and check the same items as those for E86 and E87 while moving the carriage base by rotating the pulley or belt of the VD motor.
		Foreign object contamination	If the carriage base is located in the highest or lowest position, something may have gotten caught inbetween. Remove the side panel (right side), and try to move the carriage base by rotating the pulley or belt of the VD motor.	Move it slightly in the movable direction, and remove the foreign object, if any is found.
E89	elev. timeover (Normal timeout value is set to 10 seconds.)	Belt off in the elevating drive unit	Press the door switch without closing the door. If the unit does not work, and E89 is generated, remove the side panel (right side) and check the elevating drive unit (timeout value is set to 65 seconds for initialization).	You can see the elevating drive unit by removing the side panel (right side). Check the transfer system (such as the belt) from the VD motor to the carriage base. Be careful not to touch the carriage base because it travels at high speed.
		Adjustment inaccuracy	If E89 is generated after an elevation-initializing operation toward around address 15 is completed, check that the carriage base is not jolting up and down around address 3 or 15.	Even when the carriage base reaches around the target address in 10 seconds, a timeout occurs if it cannot accurately find the stop point and jolts up and down. Check whether the adjustment of the carriage base is accurate.
		Installation error or deformation of the encoder plate, or attachment of foreign objects to it	If E89 is generated in an elevating operation to a particular address when an initializing operation is completed normally, check the current address of the carriage base in Test mode. Also check the lighting statuses of the green and red LEDs on the FNCB unit.	There may be a problem with the encoder slit around the address. Try an elevating operation to the suspected address using "Diag-Robotics-Collectively-Step by step" (Step Operation mode) in Test mode.
E8A	undefined error	Disc out-of-position sensor	The output from the disc out-of-position sensor may be incorrect during initialization immediately after the power is turned on.	Turn the unit off then back on to reinitialize it.

Errors in the loading system

The loading motor can be operated manually (Diag-Robotics-Individually-Loading-Manual in Test mode) only if you cancel the operation restriction by pressing the door switch (turning the relay on). Be sure to switch to Test mode first, because initialization (including the elevating system) is started when the door switch is pressed in any mode other than Test mode. (Initialization is not started by closing the door after switching to Test mode). In addition, be sure to press the door switch with the door open, because operating the motor without observing the change in the mechanism status may cause a secondary problem.

Error No.	LCD Display	Most Likely Causes	Check Items	Management Procedure
E97	loading SW NG	Dislodged or disconnected flexible cables	Check whether the change in the mechanism status corresponds to the logic change of the switches by rotating the pulley on the rear side manually while monitoring the logic of the five loading switches with "Diag-Robotics-Individually-Loading-Manual" in Test mode.	If the logic of the switches does not change, remove the right side panel, and check whether the flexible cable connection from the MMCB unit to the carriage base is normal. If any disconnected cable is found, reconnect it after turning the power off.
		Removal of the switch arm in the carriage base block	If the logic of the switches does not change while connection of the flexible cable is normal, check the switch arm mounted on the bottom of the carriage base block.	If the switch arm is not located at the correct position, it may have dropped somewhere inside. This may cause E88. Find and remount it to the correct position.
		Replacement of the MMCB unit	If the MMCB unit is replaced with a new one, an error is generated when the unit is turned on for the first time after replacement.	Quit from error status, then turn the unit off then back on.
E98	loading mecha NG	Grease shortage around steel ball (6)	Check whether the amount of grease around the steel ball (6) is sufficient by raising the outer table of the carriage base block after making note of the current logic of the loading switches with "Diag-Robotics-Individually-Loading-Manual" in Test mode.	Add Floil if grease is insufficient. After that, remove the side panel (right side) and cancel the operation restriction by pressing the door switch, and try manual operation of the loading mechanism.
		Abrasion of parts in the loading mechanism	Check the number of times of operation with "Info-Run statistics-Number of times-Load/Unload" in System Administrator mode because expendable parts are included in the loading mechanism.	If the number is more than 4 million, you may have to replace the carriage base.
E99	loading timeover	Mechanism adjustment inaccuracy	Read out the current logic of the loading switches with "Diag-Robotics-Individually-Loading-Manual" in Test mode, and read out the elevating address with "Diag-Robotics-Individually-Elevation-Manual" in Test mode.	Estimate the position of the carriage base block from the elevating address, and pull out the magazine to the estimated position. If the pulley or D-guide is placed against a position of the magazines such as the edge, check the adjustment of the mechanism operating unit again.
		Dislodged belt	If the loading mechanism does not operate at all when it is located in the correct stop position, there may be trouble in the motor or the transfer system.	Rotate the pulley manually, and check the change in the mechanism status. If the mechanism does not move when the pulley can be rotated, check the drive system (belt).
		Loading motor worn out or experiencing other trouble	Check the number of times of operation with "Info-Run statistics-Number of times-Load/Unload" in System Administrator mode. If the number is more than 2 million, you may have to replace the motor assembly.	There may be trouble in the motor if it can be operated by hand normally. Cancel the operation restriction by pressing the door switch and test manual operation of the loading mechanism.
		Abrasion of parts in the loading mechanism	Check the number of times of operation with "Info-Run statistics-Number of times-Load/Unload" in System Administrator mode because expendable parts are included in the loading mechanism.	If the number is more than 4 million, you may have to replace the carriage base.
		Demo mode preparation failure	If E99 is generated when you try to carry a disc to a slot where a disc has already been set during Demo mode, check that discs are not left in improper positions.	In All Slot Aging Demo mode, discs must be set in hyper magazines No. 1 to 4. The other magazines must be vacant.
		VD motor belt tension		Install the VD motor according to the instructions.

Error No.	LCD Display	Most Likely Causes	Check Items	Management Procedure
E99	loading timeover	Insufficient grease around the steel ball (6)	After making note of the current logic of the loading switches in Test mode (Diag → Robotics → individually → Loading → Manual,) Check whether the amount of grease around the steel ball (6) is sufficient by raising the outer table of the carriage base block.	Add Floil if the amount of grease is insufficient. After that, remove the side panel (right side) and cancel the operation restriction by pressing the door switch, and try manual operation of the loading mechanism.
		Insertion error of the connector of the drive	When carrying a disc to the drive, if the disc touches something while being loaded into the next bay, there may be an error mistake of the changer interface connector of the drive.	Open the rear door and check the connection. The changer interface connectors can be used only for whose exclusive bays connected to the drive. If a disc remains in the drive, pull out the drive, then reconnect it properly after removing the disc.
E9A	MTE sensor NG	Disc detection sensor trouble	Cancel the operation restriction by pressing the door switch, then perform disc loading/unloading operations with "Diag-Robotics-Collectively" in Test mode.	It is normal if an asterisk (*) is displayed properly on the display window. If it is abnormal, perform the adjustments described in Section 6.3. If it cannot be adjusted, check that DSENS is not disconnected.
EF8	MTE mecha NG	Demo mode preparation failure	If the error is generated during Demo mode execution, check that discs of the necessary number have been set to the specified positions.	Discs must be set in hyper magazines #1 to #8 in Hyper-Drive Demo mode.
		Mechanism adjustment inaccuracy	Read out the current logic of the loading switches with "Diag-Robotics-Individually-Loading-Manual" in Test mode, and read out the elevating address with "Diag-Robotics-Individually-Elevation-Manual" in Test mode.	Estimate the position of the carriage base block from the elevating address, and pull out the magazine to the estimated position. If it seems that EF8 is generated for a slot with a disc mounted, check the adjustment of the mechanical operation system again.

Door-not-opening error

This error is generated only when the subsequent operation cannot be continued without opening the door, for example, when the shipping screws are in place, or after error generation. In other cases, the attempt to open the door is abandoned.

Error No.	LCD Display	Most Likely Causes	Check Items	Management Procedure
EF3	door open NG	Something pressing against the door	Check that there is nothing in front of the door to prevent it from opening.	Make sure there is sufficient clearance for the door to open.
		Plunger trouble	Execute DOOR submode in System Administrator mode and check whether the sound of pulling the plunger can be heard.	If there is no sound, check the plunger drive circuit, power source, and plunger.
		Door lock mechanism trouble	If the door does not open when the sound is heard (retried five times), there may be a trouble in the mechanical parts for releasing the door lock (such as rods and springs).	Remove the panels on the left and right side, and check whether the mechanical parts for opening the door lock are mounted correctly.
		Door switch trouble	If you see an error indication while the door is open, check the door switch mounting and the output logic.	Also check the selectors of the serial system, because the door switch logic is read by converting it to serial data.

Nonfatal errors (mainly errors with the drive unit)

Confirmation of the causes and management procedure

Errors in the drive unit

If an error is generated during initialization after resetting, the message asking you whether to continue initialization or not is displayed. If the display returns to an error message from "Initializing" again when you continue initializing by pressing the ENT key, the problem must be corrected after forcibly opening the door. If the door is opened with a disc remaining in the drive, the information as to where the disc is to be returned will be lost when the changer interface connector of the drive is disconnected. So the disc must be removed from the drive before reinstalling the drive (or reconnecting the interface connector). Pay special attention if the connection of the interface connector is loosened or it is reconnected.

Error No.	LCD Display	Most Likely Causes	Check Items	Management Procedure
EB*	D# setup NG	- Dislodged or disconnected connector Assy - Defective medium - Drive-circuit trouble	- Check that the changer interface connector is connected. - Check that a proper medium is set in the drive. - Check whether an error message on the drive is displayed.	- If the connector is disconnected or loose, reconnect it. - Replace the defective medium with a proper one. - Refer to the service manual of the drive.
EC*	D# stop NG			
ED*	D# clamper NG	Motor or drive-circuit trouble	Check whether the clamper of the drive where the error was generated can be manually operated with "Diag-Robotics-Individually-Clamper-Manual" in Test mode.	If it cannot be manually operated, perform the same check with the other clampers. If no clamper operates, remove the side panel (M: right side), and check the connection of the DIFB unit.
		Switch trouble	If switching is not accomplished even though the switch is operable, check the switch and the read-in circuit of the switch.	If the connection is normal, also check the selector circuit.
E7*	D# clamper NG	The changer has lost data on discs in drives for some reason.	This error is generated when the clamper of the drive, which has been recognized as having no disc by the changer, is lowered. Check if a disc is loaded in the drive with a problem.	If a disc has been loaded in the drive with a problem, after the error is addressed, that disc must be returned to the mailslot by turning off then on the power (when Hot Start is set to OFF). For this, return the disc to the original slot. If there is no disc in the drive with a problem, remove and then reinsert the drive, then initialize the unit. If you perform initialization without removing and reinserting the drive, an EF8 error will be generated.
		When a drive was connected to the changer, the clamper of the drive was lowered.		

Nonfatal errors with blocks other than the drive system

If an error is generated during initialization after resetting, a message asking you whether to continue initializing or not is displayed. The system switches to User mode if there is no problem other than in the device when you continue initializing by pressing the ENT key. The devices that have problems cannot be used.

Error No.	LCD Display	Most Likely Causes	Check Items	Management Procedure
EE0	hyper timeover	Motor or drive-circuit trouble	Check that the motor can be manually operated with "Diag-Robotics-Individually-Hyper Mag-Manual" in Test mode.	If switching is not accomplished even though the switch is operable, check the switch and the read-in circuit of the switch.
		Dislodged or disconnected connector assembly	If no operation is possible, also check the operation status of the mailslot which shares the HMIF unit using "Diag-Robotics-Individually-Mailslot-Manual."	If the mailslot is also inoperable, remove the side panel (right side) and check the connection to the HMIF unit. If the connection is normal, also check the selector circuit.
EE1	f-unit timeover	Motor or drive-circuit trouble	Check that the motor can be manually operated with "Diag-Robotics-Individually-Flip unit-Manual" in Test mode.	If switching is not accomplished even though the switch is operable, check the switch and the read-in circuit of the switch.
		Dislodged or disconnected connector assembly	If operation is not possible, also check the operation status of the clamper with "Diag-Robotics-Individually-Clamper-Manual."	If the clamper is also inoperable, remove the side panel (right side) and check the connection of the DIFB unit. If the connection is normal, also check the selector circuit.

Error No.	LCD Display	Most Likely Causes	Check Items	Management Procedure
EE9	mail timeover	Motor or drive-circuit trouble	Check that the motor can be manually operated with "Diag-Robotics-Individually-Mailslot-Manual" in Test mode.	If switching is not accomplished even though the switch is operable, check the switch and the read-in circuit of the switch.
		Dislodged or disconnected connector assembly	If no operation is possible, also check the operation status of the hyper magazine which shares the HMIF unit using "Diag-Robotics-Individually-Hyper Mag.-Manual."	If the hyper magazine is also inoperable, remove the side panel (M: right side) and check the connection to the HMIF unit. If the connection is normal, also check the selector circuit.
EF1	eeprom memory NG	Memory trouble	The data which may cause an error in operation are erased automatically. When mechanism initialization is completed, check "Contents" in Info submode of System Administrator mode.	If all the disc detection information is "Uncertain", perform probing again in Probe submode.
EF2 (Error-log only)	address missing	Adjustment inaccuracy	Check the adjustments of the mechanical operation system and elevating speed following the descriptions in 6.2 and 6.5. (If EF2 errors are generated continuously, only the latest error remains in the Error log.)	When the LEDs are lit, there may be trouble in the position sensor switch for the mail slot tray. Check the logic of SNS0, SNS1, and SNS2.
EF9 EFA	mail sensor NG	Tray-position sensor switch trouble	Check that the "MAILSLOT OCCUPIED" indication by LEDs is not lit when the mail slot is open.	When the LEDs are lit, there may be trouble in the position sensor switch for the mail slot tray. Check the logic of SNS0, SNS1, and SNS2.
		Disc-sensor switch trouble	Check that the "MAILSLOT OCCUPIED" indication by LEDs is off when you close the mail slot without setting a disc.	When the LEDs are lit, and go off when you open the mailslot, there may be trouble in the disc sensor. Check the logic of SNS2.

Troubles not handled as errors (warning messages)

These are minor problems detected upon resetting that do not affect initialization of other mechanisms.

Warning Message	Check Items
Fan1 stop or locked	Check the operation of the fan.
Fan1 connect NG	Check the connection of the fan.
hyper eject and insert	Check whether eject/insert can be made in Hyper submode of System mode and the touch memory can be read after an insert operation.

Detailed description on error-log codes (table numbers, sequence steps)

S=source, D=destination, E=element

Note: The Table Number may become "00 " if an error is generated in DEMO mode.

Note: The Table Number may become "00" if an error is generated in DEMO mode.					
Table No. (hex)	Table Operation	Sequence Step (hex)	Sequence Step Operation		
00	Not used	00	Not used		
01	Position To Element (mail slot)	00	Process for starting operation		
		01	Elevation to destination		
		02	Judging for mail opening		
		03	Mail open		
		04	Finishing process		
02	Position To Element (Hypermagazine)	00	Process for starting operation		
		01	Elevation to destination		
		02	Ejecting Hypermagazine		
		03	Finishing process		
03	Correction of MoveMedium error	00	Releasing disc		
		01	Finishing process		
04	Releasing disc in mail	00	Waiting for address input		
		01	Closing mail for disc detection		
		02	Waiting for result of disc detection		
		03	Selection of operations according to result of disc detection		
		04	Opening mail if a disc is mounted		
		05	Finishing process		
05	(S, D)=(Front storage, mailslot)	00	Waiting for address input		
		01	Closing mail for disc detection		
		02	Waiting for result of disc detection		
		03	Selection of operations according to result of disc detection		
		04	Opening mail if a disc is mounted		
		05	Waiting for key input for closing mail		
		06	Switching destination addresses according to result of disc detection at Storage E		
		07	Swinging to Storage E side		
		08	Elevating to Storage E		
		09	Disc chuck		
		0A	Elevating to Mailslot E		
		0B	Releasing disc		
		0C	Waiting for result of disc detection		
		0D	Judging for mail opening		
		0E	Mail open		
		0F	Finishing process		
		06	(S, D)=(Rear storage, mailslot)	00	Waiting for address input
				01	Closing mail for disc detection
02	Waiting for result of disc detection				
03	Selection of operations according to result of disc detection				
04	Opening mail if a disc is mounted				
05	Waiting for key input for closing mail				
06	Switching destination addresses according to result of disc detection at Storage E				
07	Swinging to Rear Storage E side				
08	Elevating to Storage E				
09	Rear disc chuck				
0A	Elevating to Mailslot E				
0B	Releasing disc				
0C	Waiting for result of disc detection				
0D	Judging for mail opening				
0E	Mail open				
0F	Finishing process				
07	(S, D)=(Front storage, mailslot) Using Flip-box			00	Waiting for address input
				01	Closing mail for disc detection
		02	Waiting for result of disc detection		
		03	Selection of operations according to result of disc detection		
		04	Opening mail if a disc is mounted		
		05	Waiting for key input for closing mail		
		06	Switching destination addresses according to result of disc detection at Storage E		
		07	Checking flip-box		
		08	Swinging to Storage E side		
		09	Elevating to Storage E		
		0A	Disc chuck and swing		
		0B	Elevating to flip-box		
		0C	Slide (release)		
		0D	Flipping disc		
		0E	Slide (chuck) and swing		
		0F	Elevating to Mailslot E		
		10	Releasing disc		
		11	Waiting for result of disc detection		
		12	Judging for mail opening		
		13	Mail open		
14	Finishing process				

Table No. (hex)	Table Operation	Sequence Step (hex)	Sequence Step Operation
08	(S, D)=(Rear storage, mailslot) corresponding to side B	00	Waiting for address input
		01	Closing mail for disc detection
		02	Waiting for result of disc detection
		03	Selection of operations according to result of disc detection
		04	Opening mail if a disc is mounted
		05	Waiting for key input for closing mail
		06	Switching destination addresses according to result of disc detection at Storage E
		07	Checking flip-box
		08	Swinging to Storage E side
		09	Elevating to Storage E
		0A	Rear disc chuck
		0B	Elevating to flip-box
		0C	Slide (release)
		0D	Flipping disc
09	(S, D)=(Front storage, data transmission)	0E	Slide (chuck) and swing
		0F	Elevating to Mailslot E
		10	Releasing disc
		11	Waiting for result of disc detection
		12	Judging for mail opening
		13	Mail open
		14	Finishing process
		00	Process for starting operation
		01	Un-clamping
		02	Swinging to Storage E side
		03	Elevating to Storage E
		04	Slide (chuck) and swing
		05	Elevating to Data Transmission E
		06	Slide (release)
0A	(S, D)=(Rear storage, data transmission)	07	Clamping disc at destination drive
		08	Controlling drive (XCLMP active)
		09	Finishing process
		00	Process for starting operation
		01	Un-clamping
		02	Swinging to Rear Storage E side
		03	Elevating to Storage E
		04	Slide (chuck)
		05	Elevating to Data Transmission E
		06	Slide (release)
		07	Clamping disc at destination drive
		08	Controlling drive (XCLMP active)
		09	Finishing process
0B	(S, D)=(Front storage, data transmission) Using Flip-box	00	Process for starting operation
		01	Checking flip-box
		02	Un-clamping
		03	Swinging to Storage E side
		04	Elevating to Storage E
		05	Slide (chuck) and swing
		06	Elevating to Data flip-box
		07	Slide (release)
		08	Flipping disc
		09	Slide (chuck)
		0A	Elevating to Data Transmission E
		0B	Slide (release)
		0C	Clamping disc at destination drive
		0D	Controlling drive (XCLMP active)
0C	(S, D)=(Rear storage, data transmission) Using Flip-box	0E	Finishing process
		00	Process for starting operation
		01	Checking flip-box
		02	Un-clamping
		03	Swinging to Rear Storage E side
		04	Elevating to Storage E
		05	Slide (chuck)
		06	Elevating to flip-box
		07	Slide (release)
		08	Flipping disc
		09	Slide (chuck)
		0A	Elevating to Data Transmission E
		0B	Slide (release)
		0C	Clamping disc at destination drive
		0D	Controlling drive (XCLMP active)
		0E	Finishing process

Table No. (hex)	Table Operation	Sequence Step (hex)	Sequence Step Operation
0D	(S, D)=(Front storage, data transmission) When no drive is mounted during Demo mode	00	Process for starting operation
		01	Swinging to Storage E side
		02	Elevating to Storage E
		03	Slide (chuck) and swing
		04	Elevating to Data Transmission E
		05	Corresponding to Aging Mode (shifting return address)
		06	Swinging to Storage E side (having disc)
		07	Elevating to Storage E
		08	Slide (release)
		09	Starting controlling drive
		0A	Finishing process
0E	(S, D)=(Rear storage, data transmission) When no drive is mounted during Demo mode	00	Process for starting operation
		01	Swinging to Rear Storage E side
		02	Elevating to Rear Storage E
		03	Slide (chuck)
		04	Elevating to Data Transmission E
		05	Corresponding to Aging Mode (shifting return address)
		06	Swinging to Storage E side (having disc)
		07	Elevating to Storage E
		08	Slide (release)
		09	Starting controlling drive
		0A	Finishing process
0F	(S, D)=(Mailslot, front storage)	00	Waiting for key input for closing mail
		01	Closing mail
		02	Waiting for result of disc detection
		03	Selection of operations according to result of disc detection
		04	Opening mail if no disc is mounted
		05	Waiting for key input for closing mail
		06	Switching destination addresses according to result of disc detection at Mailslot E
		07	Swinging to Mailslot E side
		08	Elevating to Mailslot E
		09	Disc chuck
		0A	Elevating to Storage E
		0B	Releasing disc
		0C	Finishing process
10	(S, D)=(Mailslot, rear storage)	00	Waiting for key input for closing mail
		01	Closing mail
		02	Waiting for result of mail disc detection
		03	Selection of operations according to result of disc detection
		04	Opening mail if no disc is mounted
		05	Waiting for key input for closing mail
		06	Switching destination addresses according to result of disc detection at Mailslot E
		07	Swinging to Mailslot E side
		08	Elevating to Mailslot E
		09	Rear disc chuck
		0A	Elevating to Rear Storage E
		0B	Releasing disc
		0C	Finishing process
11	(S, D)=(Mailslot, front storage) Using Flip-box	00	Waiting for key input for closing mail
		01	Closing mail
		02	Waiting for result of disc detection
		03	Selection of operations according to result of disc detection
		04	Opening mail if no disc is mounted
		05	Waiting for key input for closing mail
		06	Switching destination addresses according to result of disc detection at Mailslot E
		07	Checking flip-box
		08	Swinging to Mailslot E side
		09	Elevating to Mailslot E
		0A	Disc chuck and swing
		0B	Elevating to flip-box
		0C	Slide (release)
		0D	Flipping disc
		0E	Slide (chuck) and swing
		0F	Elevating to Storage E
		10	Releasing disc
		11	Finishing process

Table No. (hex)	Table Operation	Sequence Step (hex)	Sequence Step Operation
12	(S, D)=(Mailslot, rear storage) Using Flip-box	00	Waiting for key input for closing mail
		01	Closing mail
		02	Waiting for result of disc detection
		03	Selection of operations according to result of disc detection
		04	Opening mail if no disc is mounted
		05	Waiting for key input for closing mail
		06	Switching destination addresses according to result of disc detection at Mailslot E
		07	Checking flip-box
		08	Swinging to Mailslot E side
		09	Elevating to Mailslot E
		0A	Rear disc chuck
		0B	Elevating to flip-box
		0C	Slide (release)
		0D	Flipping disc
		0E	Slide (chuck)
		0F	Elevating to Rear Storage E
		10	Releasing disc
13	(S, D)=(Mailslot, data transmission)	11	Finishing process
		00	Process for starting operation
		01	Un-clamping
		02	Closing Mailslot
		03	Swinging to Mailslot E side
		04	Elevating to Mailslot E
		05	Slide (chuck) and swing
		06	Elevating to Data Transmission E
		07	Slide (release)
		08	Clamping disc
		09	Clamp signal (XCLMP) active
14	(S, D)=(Mailslot, data transmission) Using Flip-box	0A	Finishing process
		00	Process for starting operation
		01	Checking flip-box
		02	Un-clamping
		03	Closing Mailslot
		04	Swinging to Mailslot E side
		05	Elevating to Mailslot E
		06	Slide (chuck) and swing
		07	Elevating to flip-box
		08	Slide (release)
		09	Flipping disc
		0A	Slide (chuck)
		0B	Elevating to Data Transmission E
		0C	Slide (release)
		0D	Clamping disc
		0E	Clamp signal (XCLMP) active
		0F	Finishing process
15	(S, D)=(Mailslot, data transmission) When no drive is mounted during Demo mode.	00	Process for starting operation
		01	Closing Mailslot
		02	Swinging to Mailslot E side
		03	Elevating to Mailslot E
		04	Slide (chuck) and swing
		05	Elevating to Data Transmission E
		06	Corresponding to Aging Mode (shifting return address)
		07	Swinging to Storage E side (having disc)
		08	Elevating to Storage E
		09	Slide (release)
		0A	Starting controlling drive
		0B	Finishing process
16	(S, D)=(Data transmission, front storage)	00	Process for starting operation
		01	Checking if spindle stops (XSPST)
		02	Swinging to Data Transmission E
		03	Elevating to Data Transmission E
		04	Un-clamping
		05	Slide (chuck) and swing
		06	Elevating to Storage E
		07	Slide (release)
		08	Finishing process
17	(S, D)=(Data transmission, rear storage)	00	Process for starting operation
		01	Checking if spindle stops (XSPST)
		02	Swinging to Data Transmission E side
		03	Elevating to Data Transmission E
		04	Un-clamping
		05	Slide (chuck)
		06	Elevating to Storage E
		07	Slide (release)
		08	Finishing process

Table No. (hex)	Table Operation	Sequence Step (hex)	Sequence Step Operation
18	(S, D)=(Data transmission, Front storage) Using Flip-box	00	Process for starting operation
		01	Checking flip-box
		02	Checking if spindle stops (XSPST)
		03	Swinging to Data Transmission E side
		04	Elevating to Data Transmission E
		05	Un-clamping
		06	Slide (chuck)
		07	Elevating to flip-box
		08	Slide (release)
		09	Flipping disc
		0A	Slide and swing
		0B	Elevating to Storage E
		0C	Slide (release)
		0D	Finishing process
19	(S, D)=(Data transmission, rear storage) Using Flip-box	00	Process for starting operation
		01	Checking flip-box
		02	Checking if spindle stops (XSPST)
		03	Swinging to Data Transmission E side
		04	Elevating to Data Transmission E
		05	Un-clamping
		06	Slide (Chuck)
		07	Elevating to flip-box
		08	Slide (release)
		09	Flipping disc
		0A	Slide (Chuck)
		0B	Elevating to Storage E
		0C	Slide (release)
		0D	Finishing process
1A	(S, D)=(Data transmission, XXXX) When no drive is mounted during Demo mode	00	Process for starting operation
		01	Stopping controlling drive
		02	Finishing process
1B	(S, D)=(Data transmission, Mailslot)	00	Process for starting operation
		01	Closing Mailslot
		02	Checking if spindle stops (XSPST)
		03	Swinging to Data Transmission E side
		04	Elevating to Data Transmission E
		05	Un-clamping
		06	Slide (chuck) and swing
		07	Elevating to mailslot E
		08	Slide (release)
		09	Waiting for result of disc detection
		0A	Judging for mail opening
		0B	Opening Mailslot (only when AUTO is selected)
		0C	Finishing process
1C	(S, D)=(Data transmission, Mailslot) Using Flip-box	00	Process for starting operation
		01	Checking flip-box
		02	Closing Mailslot
		03	Checking if spindle stops (XSPST)
		04	Swinging to Data Transmission E side
		05	Elevating to Data Transmission E
		06	Un-clamping
		07	Slide (chuck)
		08	Elevating to flip-box
		09	Slide (release)
		0A	Flipping disc
		0B	Slide (chuck) and swing
		0C	Elevating to Mailslot E
		0D	Slide (release)
		0E	Waiting for result of disc detection
		0F	Judging for mail opening
		10	Opening Mailslot (only when AUTO is selected)
		11	Finishing process
1D	Not used	00	Process for starting operation
		01	Stopping controlling drive
		02	Finishing process
1E	(S, D)=(Front storage, front storage)	00	Process for starting operation
		01	Swinging to Storage E side
		02	Elevating to Storage E
		03	Slide (chuck)
		04	Elevating to Storage E
		05	Slide (release)
		06	Finishing process

Table No. (hex)	Table Operation	Sequence Step (hex)	Sequence Step Operation
1F	(S, D)=(Front storage, rear storage)	00	Process for starting operation
		01	Swinging to Storage E side
		02	Elevating to Storage E
		03	Slide (chuck) and swing
		04	Elevating to Storage E
		05	Slide (release)
		06	Finishing process
20	(S, D)=(Rear storage, rear storage)	00	Process for starting operation
		01	Swinging to Storage E side
		02	Elevating to Storage E
		03	Slide (chuck)
		04	Elevating to Storage E
		05	Slide (release)
		06	Finishing process
21	(S, D)=(Rear storage, front storage)	00	Process for starting operation
		01	Swinging to Storage E side
		02	Elevating to Storage E
		03	Slide (chuck) and swing
		04	Elevating to Storage E
		05	Slide (release)
		06	Finishing process
22	(S, D)=(Front storage, front storage) Using Flip-box	00	Process for starting operation
		01	Checking flip-box
		02	Swinging to Storage E side
		03	Elevating to Storage E
		04	Slide (chuck) and swing
		05	Elevating to flip-box
		06	Slide (release)
		07	Flipping disc
		08	Slide (chuck) and swing
		09	Elevating to Storage E
		0A	Slide (release)
		0B	Finishing process
23	(S, D)=(Front storage, rear storage) Using Flip-box	00	Process for starting operation
		01	Checking flip-box
		02	Swinging to Storage E side
		03	Elevating to Storage E
		04	Slide (chuck) and swing
		05	Elevating to flip-box
		06	Slide (release)
		07	Flipping disc
		08	Slide (chuck)
		09	Elevating to Storage E
		0A	Slide (release)
		0B	Finishing process
24	(S, D)=(Rear storage, rear storage) Using Flip-box	00	Process for starting operation
		01	Checking flip-box
		02	Swinging to Storage E side
		03	Elevating to Storage E
		04	Slide (chuck)
		05	Elevating to flip-box
		06	Slide (release)
		07	Flipping disc
		08	Slide (chuck)
		09	Elevating to Storage E
		0A	Slide (release)
		0B	Finishing process
25	(S, D)=(Rear storage, front storage) Using Flip-box	00	Process for starting operation
		01	Checking flip-box
		02	Swinging to Storage E side
		03	Elevating to Storage E
		04	Slide (chuck)
		05	Elevating to flip-box
		06	Slide (release)
		07	Flipping disc
		08	Slide (chuck) and swing
		09	Elevating to Storage E
		0A	Slide (release)
		0B	Finishing process

Table No. (hex)	Table Operation	Sequence Step (hex)	Sequence Step Operation
26	(S, D)=(Data transmission, data transmission)	00	Process for starting operation
		01	Un-Clamping
		02	Checking if spindle stops (XSPST)
		03	Swinging to Data Transmission E side
		04	Elevating to Data Transmission E
		05	Un-Clamping
		06	Slide (chuck)
		07	Elevating to Data Transmission E
		08	Slide (release)
		09	Clamping disc
		0A	Clamp signal (XCLMP) active
		0B	Finishing process
27	(S, D)=(Data transmission, data transmission) Using Flip-box	00	Process for starting operation
		01	Checking flip-box
		02	Un-Clamping
		03	Checking if spindle stops (XSPST)
		04	Swinging to Data Transmission E side
		05	Elevating to Data Transmission E
		06	Un-Clamping
		07	Slide (chuck)
		08	Elevating to flip-box
		09	Slide (release)
		0A	Flipping disc
		0B	Slide (chuck)
		0C	Elevating to Data Transmission E
		0D	Slide (release)
		0E	Clamping disc
		0F	Clamp signal (XCLMP) active
		10	Finishing process
28	INITIALIZE ELEMENT STATUS	00	Waiting for start of Install Aging
		01	Installation Management
		02	Swinging to Storage E side
		03	Vertical movement to address for installation
		04	Ejecting disc (storage → carriage)
		05	Collecting data on whether a disc is mounted
		06	Returning disc (carriage → storage)
		07	Waiting for completion of Install Aging
29	EXCHANGE MEDIUM (Not used)	-	-
2A	Not used	-	-
2B	Drive Hotline Check	-	-
2C	Step Mode: Ejecting disc from rack	00	Designating VDEST address transformed from VMMSOURCE address (rack #)
		01	Elevating to designated address
		02	Chucking disc on rack side
		03	Transforming VMMSOURCE address to VDEST address (mail or drive)
		04	Swinging to flipped side
		05	Elevating to flip-box
		06	Releasing disc to Mail or Drive
		07	Flipping at flip-box
		08	Chucking disc on rack side
		09	Transforming VMMSOURCE address to VDEST address (mail or drive)
		0A	Swinging to drive side (only when Drive is designated at 03)
		0B	Elevating to designated address
		0C	Releasing disc to Mail or Drive
		0D	Clamping disc or opening mail
		0E	Starting driving (only when a drive is mounted)
2D	Step Mode: Returning disc to rack	00	Dummy step
		01	Dummy step
		02	Releasing disc to rack
		03	Elevation of carriage base
		04	Swinging to drive side (only when Drive is designated)
		05	Transforming VMMSOURCE address to VDEST address (rack #)
		06	Chucking disc on rack
		07	Flipping at flip-box
		08	Releasing disc to Mail or Drive
		09	Elevating to flip-box
		0A	Swinging to flipped side
		0B	Transforming VMMSOURCE address to VDEST address (rack #)
		0C	Chucking disc in drive or mail
		0D	Releasing clamped disc or closing mail
		0E	Stopping driving (only when a drive is mounted)
2E	Elevation aging	00	Initial setting for aging
		01	Elevating carriage base to #212
		02	Descending carriage base to #1
		03	Checking conditions for finishing aging

Table No. (hex)	Table Operation	Sequence Step (hex)	Sequence Step Operation
2F	Loading aging	00	Initial setting for aging
		01	Loading
		02	Returning
		03	Checking conditions for finishing aging
30	Flip aging	00	Initial setting for aging
		01	Flipping
		02	Flipping again
		03	Checking conditions for finishing aging
31	Mailslot aging	00	Initial setting for aging
		01	Opening mail
		02	Closing mail
		03	Checking conditions for finishing aging
32	Hyper aging	00	Initial setting for aging
		01	Hyper eject
		02	Hyper insert
		03	Checking conditions for finishing aging
33	Initializing mechanism		===== Initializing mechanism =====
		00	Waiting for a disc moving to safe position for loading
		01	Closing Mailslot
		02	Initializing elevation mechanism
			===== Returning disc to carriage mechanism =====
		03	Checking if a disc is on carriage mechanism
		04	Swinging to return (Storage) E side
		05	Vertical movement to address for returning disc
		06	Returning disc
			===== Returning disc to drive ===== (including returning disc to flip-box)
		07	Closing if aging return by Clamper-Open switch not supported
		08	Disc detection at data-transmission E
		09	Swinging to Storage E side
		A	Vertical movement to address for returning disc
		B	Loading disc at address for returning disc
		C	Checking if address for returning disc is vacant
		D	Ejecting existing disc at address for returning disc
		E	Swinging to data-transmission E side
		F	Vertical movement to data-transmission E
		10	Horizontal check for flipping, and for drive, clamping after disc insertion
		11	Pulling and flipping disc and remounting into drive
		12	Switching destinations depending on whether a disc mounted or not at returning address
		13	Vertical movement to address for returning disc
		14	Returning disc
		15	Disc detection at data-transmission E whether disc is mounted
			===== Finishing process =====
		16	Swinging to return (storage) E side
		17	Elevating to #3
		18	Process for finishing initialization
			===== Auxiliary operation for returning disc =====
		19	Swinging to return (storage) E side
		1A	Elevating to Mailslot (Return address=Mailslot)
		1B	Closing Mailslot
		1C	Waiting for decision of whether a disc is in mail
		1D	Switching destinations depending on whether a disc is in mail
		1E	Opening Mailslot
		1F	Waiting for key input for closing Mailslot
		20	Judging if disc in mail
		21	Releasing disc into Mailslot
		22	Judging if disc in mail
			===== Start playing disc =====
		23	from ALLCLCW(7) to INIE(16h)
			===== Flipping disc =====
		24	Swinging to Data Transmission E side
		25	from BRAINITA(12h) to BRAINITA(12h)
		26	Checking flip-box
		27	Slide (release)
		28	Flipping disc
		29	Checking returning address again
34		00	Request to stop drive
		01	Checking if drive stops
		02	Process for finishing initializing

Physical Addresses

FRONT

address(hex)	
Magazine	
D4	Hyper
C1	
AC	Mail
9E	Magazine 3
6D	
68	Magazine 2
37	
32	Magazine 1
1	

REAR

address(hex)	address(hex)	address(hex)
Magazine	Drive	Flip
D4	CD Drive 8	
A3	B2 Drive 7	B8 Flip
9E	97 Drive 6	
6D	7C Drive 5	82 Flip
68	61 Drive 4	
37	46 Drive 3	4C Flip
32	2B Drive 2	
1	10 Drive 1	16 Flip

SCSI SENSE CODE

Sense Key

Sense Key	Generic Category	Description
0h	NO SENSE	Indicates that there is no specific sense key information to be reported for the designated logical unit. This would be the case for a successful command.
2h	NOT READY	Indicates that the drive cannot be accessed. Operator intervention may be required to correct this condition.
4h	HARDWARE ERROR	Indicates that the device detected a non-recoverable hardware failure while performing the command or during a self test.
5h	ILLEGAL REQUEST	Indicates that there was an illegal parameter in the CDB or in the additional parameters supplied as data for some commands. If the device detects an invalid parameter in the CDB, then it terminates the command without altering the medium. If the device detects an invalid parameter in the additional parameters supplied as data, then the device may have already altered the medium.
6h	UNIT ATTENTION	Indicates that the removable medium may have been changed or the device has been reset.
8h	ABORTED COMMAND	Indicates that the device has aborted the command. The Host may be able to recover by trying the command again. This error is reported for conditions such as an overrun etc..

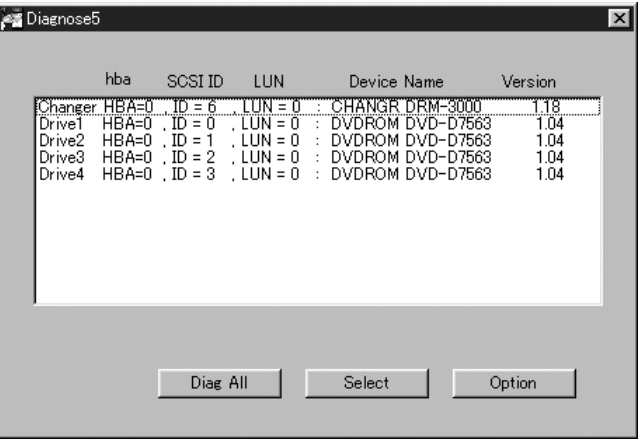
ASC / ASCQ

Sense Key	ASC-ASCQ	Description
0h (NO SENSE)	00-00	No additional sense information
2h (NOT READY)	04-01	In process of becoming ready
	04-02	Initializing command required
	04-03	Manual intervention required
	04-80	Waiting for preparations
	3A-00	Medium not present
	53-80	Medium release is impossible
	53-82	Door is open
	53-83	Disc mounted incorrectly
	53-86	Denied by the current function settings
	53-88	Medium removal prevented
4h (HARDWARE ERROR)	15-01	Mechanical positioning error
	40-NN	Diagnostic failure on component NN (80h-FFh)
	43-00	Message error
	49-00	Invalid message error
5h (ILLEGAL REQUEST)	20-00	Invalid command operation code
	21-00	Element address is out of range in CDB
	21-01	Invalid element address
	24-00	Invalid field in CDB
	25-00	Logical unit is not supported
	26-00	Invalid field in parameter list
	39-00	Saving parameters is not supported
	3B-0D	Destination element full
	3B-0E	Source element empty
	3B-11	Medium magazine not accessible
	3B-80	Medium transport element is full
6h (UNIT ATTENTION)	28-01	Import or export element accessed
	29-00	Power on, reset or bus device reset occurred
	2A-01	Mode parameter is changed
8h (ABORTED COMMAND)	47-00	SCSI parity error
	48-00	Initiator detected error message received
	53-81	Someone improperly opens the door
	53-84	Source storage element overlap
	53-85	Invalid source storage element address
	53-87	Non-volatile information is invalid

CHANGER DIAGNOSIS PROGRAM “Diagnose V”

How to acquire information on the internal system of the changer, how to upgrade the firmware, and how to modify information on the internal system of the changer are outlined here. For details, refer to the user's manual for Diagnose V.

1. Main display



After the program is started, the above main display appears, and indications for the SCSI devices being connected to the PC are displayed.

Note:

If the Automatic Insertion function for drives is set to ON in the settings made on the PC, when the program starts, it asks if you wish to turn this function OFF. In this case, set this function to OFF.

2. Acquiring information on the internal system of the changer



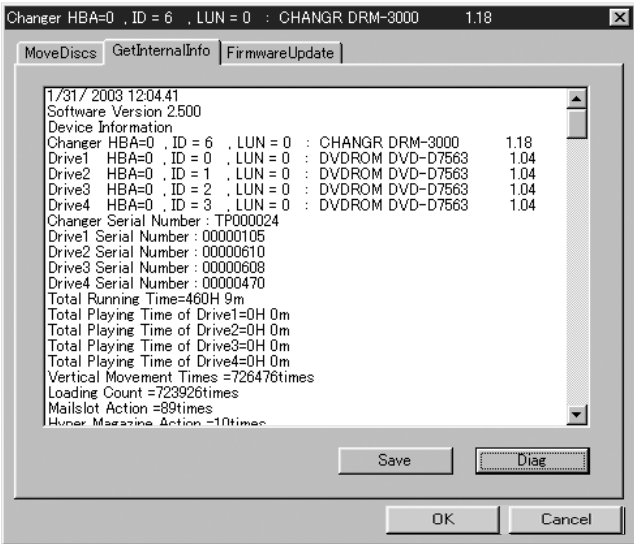
• **Diagnose button**

Click on this button to read the EEPROM of the changer to display information on the internal system of the changer.

• **Save button**

Click on this button to save the information on the internal system of the changer as a file.

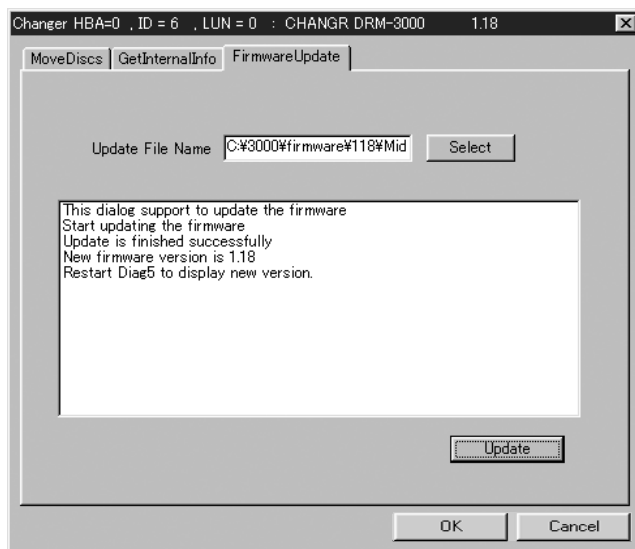
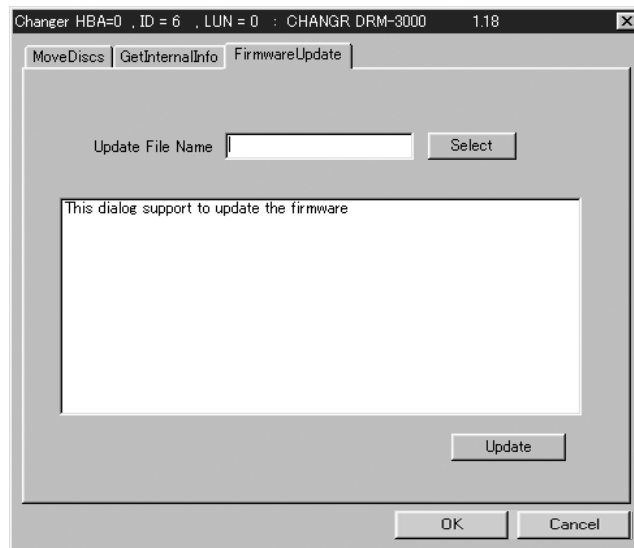
• **Example of results of a diagnosis**



3. Upgrading the firmware

With Diagnose V, Version 2.50 and afterwards, content of the firmware of the changer can be rewritten.

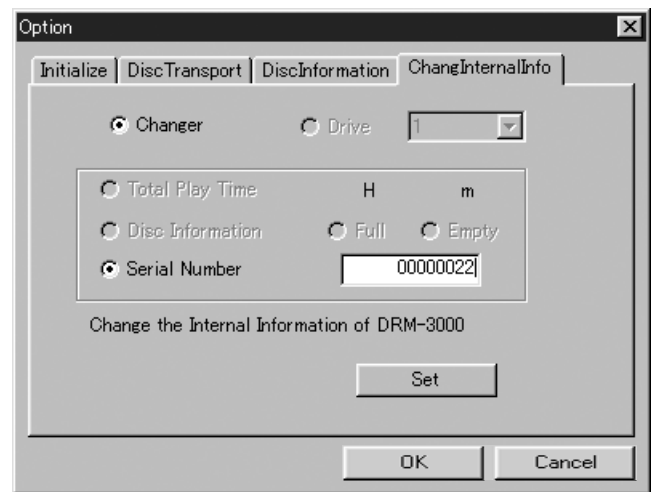
Designate a file to which you wish the firmware to be rewritten with the Select button, then click on the Update button.



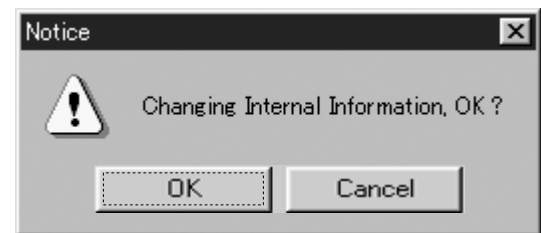
After upgrading is completed, restart Diagnose V to display the upgraded version of the program.

4. Modification of the information on the internal system of the changer

If the MMCB Unit is replaced for a repair, etc., the serial number of the changer must be reentered. On the main display, select "Changer" (the line on the display is reversed,) then click on the Option button.



Enter the serial number of the changer, then click on the Set button.



Click on the OK button.

